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Medicine

The Treatment of Hypertension

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Hypertension is a very popular disease with doctors because in most cases it produces by itself no symptoms, and so the doctor, who alone can measure the blood pressure, finds himself in a commanding position. Patients themselves have a not entirely unfounded fear of high blood pressure, and many of them realize that it is one of the few clues as to future health which can be found in an apparently normal person. Hypertension, that is to say, a persistently raised diastolic pressure, is often the cause of serious disease and early death. Figures compiled from Life Insurance records by Dublin, Lotka and Spiegelman (1949), and an extensive follow-up study by Bechgaard (1946), as well as other papers, all show an excess mortality from cardiovascular and renal disease with even small increments of diastolic pressure above 90 mm. of Mercury. Systolic pressure is more variable and bears a less close relation to disease.

When the blood pressure must come down

Hypertension produces symptoms directly, headache for instance, only when the diastolic pressure rises to very high levels, usually over 120 mm. of Mercury. Therefore, when treating a patient with hypertension, one must distinguish between actual symptoms which will be benefited by lowering blood pressure and a danger of future disease which might be lessened. In the first case a decision is fairly simple, although treatment may be very arduous. In the second case, the probable benefits must be weighed against the burden of treatment.

Hypertensive heart disease and arteriolar necrosis (malignant hypertension) are reversible conditions in their early stages. Every effort must be made to lower the diastolic pressure and keep it, if possible, below 100 mm. of Mercury. Severe renal damage with blood urea nitrogen above 35 mgm. per 100 mls may prevent effective treatment; in other cases malignant hypertension responds well. In 25 such cases under my observation, whose diastolic pressure was kept below 110 mm. of Mercury for one year, papilloedema and retinal hemorrhage cleared in all, and only four minor complications occurred.

Hypertensive heart failure is sometimes irreversible, but frequently one can observe decrease in size of the heart and reversion to normal of ST-T depression in left ventricular leads, when the blood pressure is satisfactorily lowered. Recurrent attacks of failure, inevitable if the blood pressure remains high, can be prevented. Similar improvement can be obtained when dyspnoea or cardiac asthma are the symptoms complained of.

Hypertensive strokes do not recover better with lowering of blood pressure and it is at least doubtful whether further strokes can be prevented in this way once cerebral arterial disease has become apparent. Coronary artery disease is more common in hypertensive than in normotensive people, but Robertson and I (1959) in 104 patients treated for severe hypertension found cardiac infarction as common in cases well controlled as in those whose blood pressure remained very high. Palmer (1937) found no worse prognosis in hypertensive patients after coronary thrombosis than in those with normal blood pressure. In the presence of symptoms of arterial insufficiency an attempt should be made to lower the blood pressure, if it is indicated on other grounds; but carefully, since too great a fall may cause further ischemia.

Malignant hypertension and hypertensive heart failure are absolute indications for hypotensive therapy. In other cases treatment is prophylactic. Obviously, prevention of cerebral hemorrhage or heart failure is far preferable to attempts at curative treatment after the event, which may be quite unavailing. Therefore, before embarking on what may be a very long term program, it is essential to balance the dangers of the disease against the cost and strain of the treatment. The main prognostic points are the height of the diastolic pressure, the retinal arteries, the electrocardiogram and the sex of the patient.

Bechgaard found eight times the expected mortality in men with casual diastolic pressures over 130, and Leishman (1959) found 100% mortality in a similar group after 10 years, but less than half this mortality with a diastolic pressure between 100 and 120.

Keith, Wagener and Barker (1939) introduced a classification of arterial changes and found a great increase in mortality when Grade ii changes, (focal arterial narrowing and arterio-venous nipping) were present. It should be mentioned that retinal arterial or venous thrombosis, though common in hypertensive patients and causing much disruption of the retina, are not equivalent to Grade iii retinopathy from a prognostic point of view. Grade iii, that is diffuse bilateral hemorrhages and exudates, should be considered as equivalent to malignant hypertension and treated as such.

Evans (1957) showed that ECG evidence of left ventricular strain is of bad import apart from the actual level of blood pressure. Fifty male patients with ECG changes suffered 80% mortality in 10 years from hypertensive and arterial disease, but in 50 men with similar pressures but normal ECG the only deaths were in nine patients who had cardiac pain at the start of the period. In a personal series of 27 patients with diastolic pressures over 120 and ECG changes but no other complications, 22 serious complications occurred in 110 patient-years (that is 27 patients followed for an average of just over four years), while in nine patients with equally high diastolic pressure and normal ECG, there was no complication in 30 patient-years.

All studies of the natural history of hypertensive disease, with whatever type of classification according to level of blood pressure or secondary diseases, have shown that women, other things being equal, have a much better prognosis than men. In fact women with diastolic pressure below 120 and without obvious arterial disease, have very little excess mortality from their hypertension.

When the diastolic pressures after a period of rest is below 110, it seems likely that the only dangers are from further rise in blood pressure, which can be checked by observation, and from increased incidence of vascular disease. Except in the young patient, it seems doubtful whether the progress of atheroma would be prevented by lowering the blood pressure.

It therefore appears that symptomless hypertension should be treated most energetically in a young man with abnormal ECG or Grade ii retinopathy, but extremely casually in a middle-aged woman without abnormal findings apart from her blood pressure, and with varying degrees of insistence between these extremes. Effective hypertensive therapy is often very trying: the patient on ganglion blocking drugs who feels well, is usually quite out of control. It is not worth while inflicting physical discomfort and financial strain for 20 or more years unless there is a considerable danger, without treatment, of irreversible disease. Ineffective therapy may be justified in the relatively good risk case provided it is cheap, free from side-effects and satisfies the patient.

Methods of Lowering Blood Pressure

The most satisfactory treatment of high blood pressure is when a cause, such as unilateral renal disease or phaeochromacytoma, can be found and treated. In other cases, which form the majority, one must take the less perfect course of neglecting the fundamental cause and treating the blood pressure itself. Bed rest alone will bring down blood pressure in a very striking way, and so will relief of tension and excitement. The patient's blood pressure is always higher on his first visit, than when he has become accustomed to the sphygmomanometer and the doctor's face; but one hopes to be treating a patient who will not always be lying in bed, who will be working and is bound to meet situations as frightening as the doctor's office. Sedatives and tranquillizers have a place in the treatment of the mild or labile hypertensive. Phenobarbitone is as useful as any. Veratrum alkaloids probably have no specific hypotensive action other than as sedatives.

The preparations of Rauwolfia, on the other hand, are generally agreed to have a specific and central action in lowering the blood pressure. In some cases their action is quite dramatic, in others they seem to have no effect at all. There is no particular advantage in having a purified alkaloid rather than a crude preparation. Depression is the main toxic effect, and not infrequently prevents the use of these drugs. Rauwolfia alkaloids are the method of choice when starting treatment, provided that there is no urgency. The effect on the blood pressure may not be apparent for two or three weeks. Hydrallazine also has a hypotensive action, but only in large doses when the incidence of serious toxic reactions becomes very high or in combination. It should not be used in the ordinary case.

Chlorothiazide and related diuretics aid in controlling blood pressure by lowering the circulating fluid volume (Wilson and Freis, 1959). They are a useful adjuvant to Rauwolfia treatment and combined tablets with supplementary potassium are available. With ganglion blocking drugs their effect is even more striking. Salt restriction appears to act in the same manner, but is much more arduous for the patient.

Since 1949, when ganglion blocking drugs were introduced, a variety of compounds have been used. It is my impression that pentolinium (Ansolysen retard) by subcutaneous injection, gave the best control, but few patients are willing to undergo this treatment when a drug active by mouth is available. Pentolinium by mouth is unreliable and relatively ineffective. Mecamylamine (Inversine) is both active and predictable, but gives severe side-effects: constipation, impotence, blurring of vision and dry mouth. For these reasons it should always be given from the start in combination with chlorothiazide. It is a long acting drug and need be given only twice a day, starting with 2.5 mgm. b.i.d. and working up until the desired fall of standing blood pressure occurs. These ganglion blocking drugs all affect the parasympathetic as well as the sympathetic ganglia, which is why they have such severe side effects. Two new drugs, Darenthin and Ismelin, seem to block the sympathetic postganglionic nerves only. Both produce postural hypotension in a similar manner to other ganglion blockers, but without many of the side-effects. Darenthin is a relatively short acting drug. Dosage starts with 100 mgm., 4-6 hourly; Ismelin is long acting and dosage starts with 10 mgm. b.i.d. In both cases the dose must be worked up until an

effect is obtained. In my experience both are as effective as Mecamylamine and much better tolerated. Ismelin teams well with Hydrallazine.

Surgical treatment has gone out of vogue, but there is still a definite place for extensive sympathectomy in some cases. Some patients simply do not respond to drug treatment without crippling side-effects, others cannot be trusted to take their tablets regularly. Sympathectomy is capable of reversing the course of malignant hypertension, and even if the initial blood pressure fall is not always maintained, subsequent drug treatment may be made much easier.

Summary

Treatment of hypertension is increasingly expensive and unpleasant in proportion to the effect obtained. The expected benefits of treatment must be carefully weighed against the side-effects of drugs which will have to be used for a very long period. Sedatives, rauwolfia, alkaloids, diuretics and ganglion blocking agents form a series of drugs increasing in efficacy, but also increasing in toxicity and general unpleasantness. One can only hope that a rational treatment will soon be discovered based on the actual mechanism sustaining high blood pressure.

References

Bechgaard, P.: (1946). Acta Med. Scand. Supp. 172.
Dublin, L. I., Lotka, A. J. and Spiegelman, M. (1949). "Length of Life. A Study of the Life Table", 2nd Ed. Ronald Press Co., New York.
Evans, W. (1957). Lancet 2, 1953.
Keith, N. M., Wagner, H. P. and Barker, N. W. (1939): Amer. J. Med. Sci., 197: 332.
Leishman, A. W. D.: (1959) B.M.J., i, 1361.
Newman, M. J. D. and Robertson, J. I. S. (1959): B.M.J., i, 1368.
Palmer, J. H. (1937): Quart. J. Med., 6: 49.
Wilson, I. M. and Freis, E. D. (1959): Circulation, 20: 1028.

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Modern Treatment of Obesity

F. Gerard Allison, M.D.

Modern treatment of obesity dates from Mr. William Harvey's high protein, low fat, low carbohydrate of 1863. Fifty years previously some physicians prescribed Castile soap orally, and leeches to the anus.

The word treatment in the title needs a little expansion into physiology to be comprehensible. The dividing line between simple overweight and obesity is set at a 20% increase from the ideal weight.

Like a bank account the fat balance is a result of the caloric intake minus the energy output. The latter is comprised of B.M.R. specific dynamic action of food, work, and non-work activities. A daily excess of intake over outgo of 100 to 200 calories will result in a gain of about 10 to 20 pounds a year. One pound of fat is equal to 4000 calories.

The obese person has an imperfect sense of satiety. The satiety center is in the ventromedial nuclei of the hypothalamus. The function of this area is to check constantly activated feeding centers in the lateral portion of the hypothalamus[1]. Intravenous gold thioglucose will destroy the ventromedial nuclei of an animal so that no satiety plateau occurs, feeding proceeds constantly, and rapid obesity results.

Gastric sensations also have importance in the matter of eating. Hunger cramps are due to stomach contractions, but, if the stomach is completely denervated to prevent cramps being felt, the subject can still feel weak and empty[2]. Gastric distension will arrest feeding for a time[1]. Body temperatures will rise up to 2° centigrade post-prandially, especially after a protein meal, and this helps create a sense of comfort and satiety. It may also account for the anorexia in most febrile conditions.

Much has been written about the relationship of exercise to obesity. It is true that in persons of normal weight it takes 21 hours of golf to remove 2 pounds of fat if the diet is unaltered, but the heavy obese person gets much more exertion out of carrying around his surplus weight and so would lose more. The danger is that prolonged exercise would increase the appetite. However, it has been shown that exercise for up to an hour at a time does not have this effect. Farmers pen cattle and hogs for fattening. 80% of obese children are voluntarily inactive in sports because of lack of agility and fear of ridicule.

Causes

The accompanying chart shows the more important known causes of obesity. The last three items need some comment.

Causes of Obesity

GENETIC TYPES:
- Monstrous Infantile Obesity with Laurence-Moon-Biedl Syndrome
- Von Gierke's Glycogen Storage Disease

HYPOTHALMIC INJURY
FRONTAL LOBOTOMY
ISLET CELL TUMOR
CUSHING SYNDROME
CASTRATION
IMMOBILIZATION
PSYCHIC DISTURBANCE
SOCIAL AND CULTURAL PRESSURE
FAMILY EATING HABITS

Psychic disturbance is a common cause of obesity and one which is very difficult to treat. Excessive eating is a response to and a compensation for tension and frustration. It is possible that emotion may cause a functional disturbance of the hypothalamus with delayed action of the satiety mechanism. Obesity is common in overprotected children who are fussed over by a frustrated demanding mother.

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Social and cultural pressure favouring obesity is common in the Middle East where prospective brides are encouraged to avoid exertion and fed on fenugreek to improve their appetites.

The late Dr. A. T. Cameron[3] performed some rat feeding experiments with fenugreek at my request and found that while there was no effect on adult rats it did increase the weights of immature rats.

Family eating habits and example are a common cause of obesity and of transmission of obesity through a number of generations.

History-taking

In taking the history of an obese patient associated with diseases such as hypertension, diabetes, coronary disease and cholecystitis will, of course, be considered and certain specific questions should be asked related to the obesity, as this information may be helpful in treatment. For example—familial history of obesity, hypertension, diabetes, etc., duration of obesity, precipitating cause if known, e.g. pregnancy, obesity of wife or children, proportions of meals eaten away from home, amount of protein consumed and finally, the motive for wishing to reduce weight at this time. The most compelling motives are fear, vanity and avarice. The stronger the motive, the better the result.

Examination of an obese person should include a one hour post-prandial blood sugar as a screening test for diabetes. Ogilvie[4] observed that after 8 years of obesity glucose tolerance was impaired in many cases, and after 18 years in all cases in his series, presumably due to progressive failure of islet cells. Delayed action of islet cells may give hypoglycemic symptoms four hours after eating, so every sugar tolerance curve for hypoglycemia should include both early and late portions of the curve.

Newburgh and Conn[5] have stated that 50% of diabetics are obese and noted that 21 of 22 very obese diabetics obtained normal sugar tolerance curves after effective weight reduction.

Education of an obese patient may start with some general remarks on insurance mortality figures pointed by the question: "Did you ever see a person over 80 who was obese?" The effects of obesity on blood pressure arteries, heart and pancreas may be mentioned. In female patients particularly, enquiries as to intake of protein foods and fondness for meat are helpful. The classical fat lady on the chaise longue with a box of chocolates at her elbow dislikes protein and is too flabby to endure exercise. If success is to be achieved protein intake of at least 60 gms. daily is essential to repair protein malnutrition, to control reactive hypoglycemia following carbohydrate intake, to supply vitamins and minerals. Moreover the specific dynamic action of protein ensures that 30% of its caloric value will be lost in heat production in the act of digestion, whereas only 5% of fat or carbohydrate is so lost. The formula 1 egg = 1 oz. meat = 1 oz. fish = 1 oz. cheese = 1 glass skim milk or buttermilk = 6 gm. x 10 = 1 day's protein intake should be taught.

The patient must learn to become calorie conscious, should be taught particularly of the high calories in snack foods.

Perhaps the most important idea to impart is that successful weight reduction is a lifetime change in eating habits and exercise in which the patient has to do the work. Diet can be a little less rigorous when the desired weight is achieved, but it can never be abandoned without relapse.

Concertina reducing is useless and frustrating. It leads only to collections of fat clothes, medium clothes and thin clothes. A simple method of attempting to avoid a sequence of relapses is to have a bathroom scale with a yearly calendar and a pencil at hand. The weight is recorded daily or bi-weekly. A gain of 4 pounds above ideal weight is a signal for increased severity of diet. Regular visits to the physician during weight loss are helpful to deal with problems and to maintain discipline.

Dieting

A period of hospitalization is useful to teach caloric values, particularly, what a 1000 calorie diet looks like and feels like.

Rule one — in any reducing diet is nothing between meals except water, clear tea or an apple. This will be difficult for obese ladies afflicted with the "night-eating syndrome."[6]

Rule two—is that fat free proteins must be eaten at each meal to a total daily intake of at least 60 gms. pure protein, i.e. 10 oz. of lean meat or its equivalent.

Rule three — is that the balance of the meal is composed largely of big helpings of non-starchy vegetables, salads with vinegar, fresh fruit or diabetic jams and jellies. Sucaryl is used for sweetening. Two slices of thinly buttered bread and one helping of cereal are allowed daily.

The following foods are avoided — sweets, fats, gravy, whole milk, cream, ice cream, cream cheese, pastry, cakes, macaroni, mayonnaise, nuts, fruits canned with sugar.

Printed diets as on page 601 of Duncan's Diseases of Metabolism 1959 may be helpful to some meticulous literal minded individuals. Others may find of value a celluloid calorie counting wheel.

Exercise

If possible the patient should walk to work twice daily unless other exercise is planned for that day. If unable to leave the house, setting up exercises morning and evening and frequent contractions of the abdominal muscles at odd moments will help to some extent.

After 10 pounds have been lost an alcohol rub twice daily of loose skin on neck, upper arms and thighs may help to restore tonus. The object of treatment is to lose two pounds a week.

In growing children the object of treatment is to prevent weight gain so the child will grow up to the correct weight.

With regard to medication, a multivitamin pill should be given daily whenever severe dieting is necessary. Phenobarbital gr. ¼, three times daily may be of assistance for tension and restlessness. If hunger is too troublesome, appetite depressant tablets may be used temporarily, but care must be taken that the protein intake does not fall with the anorexia produced. Thyroid is never used. Premenstrual tension and fluid gain can be counterbalanced by 50 mgm. Hydrochlorothiazide daily for a week before the period. It may also be tried on other occasions if there is an unaccountable absence of weight loss.

Pickwick Syndrome

Patients over 300 pounds are in danger of developing the Pickwick syndrome—named after the fat boy in Dickens' Pickwick Papers who was always falling asleep.

Huge obesity makes breathing too much work, and shallow respirations lead to anoxemia and accumulation of CO_2 in the blood. Polycythemia and right ventricular failure usually follow—cyanosis, Cheyne Stokes breathing and falling asleep at odd moments are characteristic. Treatment for heart failure, oxygen from an intermittent positive pressure apparatus fitted with an electric mechanism to force automatic breathing, and drastic weight reduction will lead to recovery. But even a patient thus saved from death may again attain a lethal obesity in spite of the most serious warnings.

Prognosis

The prognosis of weight reduction is good if the motive for reducing is strong, poor either if the motive or the character of the food-addict is weak.

It has been said that one quarter of the patients advised to reduce never make the attempt, one quarter try for a month, one quarter for three months, and one quarter for a year or more. Of the latter group half of them will maintain a more normal weight indefinitely.

References

1. Mayer, Jean: Post Graduate Medicine 1959. 25: 623.
2. Grossman, M. I. and Stein, I. F.: Applied Physiology 1949. 1: 263.
3. Cameron, A. T. and Carmichael, J.: Trans. Royal Society of Canada 1941. Section 5: 17.
4. Ogilvie, R. C.: Q. J. Medicine 1935. 28: 345.
5. Newburgh, L. H. and Conn, J. W.: J.A.M.A. 1939. 112: 7.
6. Beaudoin, R. and Mayer, J.: J. American Dietetic Assn. 1953. 29: 29.

Pediatrics

Congenital Heart Disease

G. R. Cumming, M.D.

The purpose of this paper is to survey the common congenital cardiac malformations, to review their main diagnostic features, and to present current thoughts on management, emphasizing the indications for and risks of surgery. Papers on diagnostic and surgical aspects of congenital heart disease have flooded the literature during the last 10 years, and, probably, in no field has more money been spent for fewer patients. However, the reward has been tremendous, and although congenital disease accounts for less than one per cent of all cardiac disease, it is by no means rare with an incidence of at least five congenital heart patients for every 1,000 live births. In order to expedite matters the individual lesions will be discussed separately.

Patent Ductus Arteriosus

The key to diagnosis is the continuous murmur which may be present from the newborn period. If the clinical picture is typical no additional diagnostic studies are required. In some cases the continuous murmur may not become apparent until age 12 to 24 months and the diastolic component may come and go. Surgery should be done in infancy if symptoms or failure to thrive are present, done electively at age two or three if the lesion is asymptomatic. Risk in uncomplicated cases is under one per cent. Surgery is recommended in all cases — (1) to eliminate the danger of bacterial endocarditis, (2) to prevent changes of pulmonary hypertension, (3) to avoid repair in adult life, when the overload on the heart eventually leads to heart failure, and (4) to prevent aneurysmal dilatation of the pulmonary artery. If right ventricular hypertrophy or heart failure, or atypical murmurs are present, diagnostic studies are necessary and very rewarding. These should be performed in infancy, for pulmonary vascular disease may become severe with advancing years, and a stage may be reached where surgery is contraindicated. The pulmonary resistance may become elevated enough to cause some flow of unoxygenated blood from the pulmonary artery through the ductus and down the aorta, producing the diagnostic picture of cyanosis and clubbing in the toes and not the fingers.

Atrial Septal Defect

The common type is in the area of the fossa ovalis. Clinical diagnosis is based on a systolic ejection murmur due to high flow across pulmonary valve. This murmur may be loud and accompanied by a thrill, or may be as soft as an innocent murmur. The key here is the second sound which is widely split at the base, and the degree of splitting does not vary much with respiration. Radiologically there is increased pulmonary vascular markings, some dilatation of right atrium, right ventricle, and pulmonary artery. Associated

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lesions of anomalous venous return, pulmonary stenosis and pulmonary hypertension may be elucidated by additional studies.

The treatment here is again surgical in all cases, with cases discovered in infancy having elective repair at age 4 to 5. Risk is under 1% in these cases. While longevity has been reported in this disease, most patients develop symptoms leading to heart failure during the third or fourth decade and some develop irreversible pulmonary hypertension. The latter is rare in uncomplicated cases before age 20. Various centres use different surgical approaches. The procedure may be done closed through an atrial well or open, utilizing hypothermia or cardio-pulmonary by-pass.

Coarctation of the Aorta

Diagnosis rests on decreased or absent femoral pulses and a systolic brachial artery pressure greater than the femoral.

Repair is indicated in all cases, for average age of death without surgery is about 35 years. In the asymptomatic child with no aortic regurgitation, cases are done electively at age 8 to 10. This ensures that the aorta has been well developed and the anastomosis will be large enough without growth to allow unobstructed flow for the patient's lifetime. Aortic regurgitation makes it mandatory to relieve the additional strain on the left ventricle at an earlier age.

Not infrequently coarctation may cause severe heart failure in early infancy. Arm blood pressure may not be elevated when failure is present. Diagnosis may be confirmed by angiography. These cases may be tremendously improved by digitalis therapy and then carried until the elective age is reached, but earlier surgery is becoming more and more popular. If digitalis does not control failure, emergency surgery is life-saving, as in the case whose x-ray is shown in Fig. 1. Coarctations frequently remain undiscovered until adult life, but surgery is indicated up until age 35 or 40 to prevent heart failure, aortic rupture or rupture of cerebral aneurysms which are the common causes of an early death. After age 40 the aorta may have changes making surgery treacherous, and cerebral softening may occur after the blood pressure is lowered.

Ventricular Septal Defect

Diagnosis depends on a grade 3 to 4 systolic murmur and thrill at the lower sternal edge. 98% of defects are high in the membranous septum and the muscular defect or Maladie de Roger is rare.

The small defect with only a slight shunt and normal right heart pressures presents a danger of endocarditis only, and is currently left alone. These cases, perhaps, will never require surgery but their natural history is not well known. The defect that is a little larger with a moderate shunt, but with only slight elevation of pulmonary pressures, can be repaired at a risk of under 5%, and surgery is now advised in all these cases, although there is

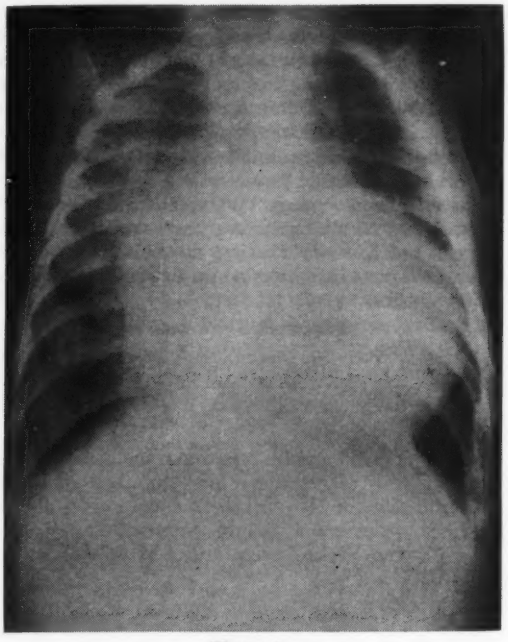


Figure 1
Severe heart failure in a case of coarctation of the aorta cured by emergency surgery.

no hurry. In larger defects flow and pressure through the lungs is still higher, and surgery is definitely indicated and with some urgency. The risk here is higher, but even in the most severe cases is only 20 per cent.

Finally, there is the group of ventricular defects where the lung vessels are badly damaged and blood flow through the lungs is decreased. Where pulmonary flow is less than systemic, surgery is not indicated, for the defect acts as an outlet for blood that the lungs cannot handle. If pulmonary flow is still greater than systemic flow, the defect should be closed with a valve type or perforated patch. Risk is 50%. Just how much the pulmonary vascular disease is reversible is a problem that remains unanswered to date.

Thus management and risk in ventricular defects depends considerably on the size of the hole and the condition of the lungs.

Open heart surgery with a pump carries a 70 to 90% risk in the infant under 20 pounds or under two years of age, so that all these cases are best tided over until growth has occurred. If severe failure develops in infancy and is not completely controlled by digoxin, a palliative surgical procedure that may be used with excellent results in carefully selected cases consists of narrowing the pulmonary artery with a broad ligature, thus reducing pulmonary flow and pressure. The cases so managed show rapid recovery from heart failure but will require corrective surgery at a later date

Isolated Pulmonary Stenosis

This is a relatively common lesion. A pulmonary systolic murmur and thrill gives the diagnosis. Heart size may be relatively normal, and there may be post stenotic dilatation of the pulmonary artery. The stenosis is most commonly valvular, but infundibular narrowing may occur alone or in association with valvular stenosis. At present surgery is recommended in all cases with right ventricular systolic pressure over 70 mm. Hg. Most centres are changing to direct vision surgery, utilizing by by-pass, hypothermia or merely inflow obstruction, as section of the valve requires but a moment or two. Risk is well under 5%, and total anatomic correction is produced.

Congenital Aortic Stenosis

This is another relatively common disease, and it should be thought of more frequently. Diagnosis depends on an aortic systolic murmur and thrill radiating to the neck. In the infant the murmur may be loudest along the left sternal edge. Aortic stenosis should be treated with respect, for it may lead to sudden and unexpected death despite a normal electrocardiogram and normal heart size on x-ray. All cases with symptoms require urgent surgery by by-pass. Risk in these cases is so much better than in the acquired disease, and most centres have had no mortalities in uncomplicated cases.

Usually the cusps may be cut so that no serious valve insufficiency results. In some cases the stenosis is subvalvular.

The asymptomatic case poses a problem, and our current approach is to recommend left heart catheterization to assess the severity of the narrowing in all cases where the severity is in doubt following clinical examination.

Tetralogy of Fallot

This well known lesion consists of pulmonary stenosis and a ventricular defect, with right ventricular hypertrophy and overriding of the aorta. The anatomic problem may be nicely shown in a selective angio-cardiogram (Fig. 2). This lesion was first attacked surgically by the Blalock shunt, creating an artificial ductus to increase pulmonary flow. In 1949 Brock started to directly relieve the pulmonary stenosis by a closed technique. With the advent of by-pass techniques it was hoped that these palliative operations would be outmoded, and total correction would be easily achieved. The early mortality for total corrective procedures for this lesion in leading American centres was up to 50%, and in Brock's hands an awesome 90% in 27 "mild cases." These mortality rates are, of course, unacceptable, and the disappointment and tragedy has been great. However, variations in patching techniques, control of post operative heart block and other surgical refinements have now reduced mortality figures to an acceptable 10% or even less in the milder cases.

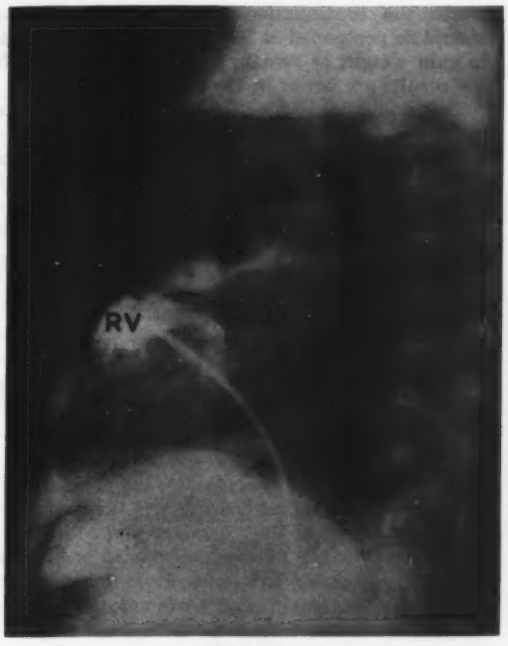


Figure 2

Anatomic detail in Tetralogy of Fallot as shown in a selective angiocardiogram, lateral view.

Arrow 1 shows the jet of media going through the narrow pulmonary valve. Arrow 2 the infundibular chamber below which is a second infundibular narrowing. Arrow 3 a second jet of media going posteriorly through the ventricular defect going from right ventricle to left ventricle. The catheter is in the mid-zone of the right ventricle.

Our current approach to the tetralogy lesion is

(1) Cases with a moderately good outflow tract and adequate pulmonary vessels and mild cyanosis — elective repair at age 5 to 10.

(2) cases with severe cyanosis, a narrow outflow tract and poorly developed pulmonary vessels — a Blalock procedure is done — in early infancy if cyanosis is severe or anoxic attacks are present, or at age two to three. This allows some development of the pulmonary vessels. At a later date the shunt is taken down and total correction achieved.

Transposition of the Great Vessels

This is a common lesion that is important primarily during the first year of life, for 90% of cases fail to reach that milestone. Diagnosis is based on a rapidly enlarging heart in a mild to severely cyanotic infant and may be confirmed by angiocardiography. Some of these hearts are near normal save for the transposition, but the simple and obvious surgical transplant of the vessels fails because the coronary vessels come off the aorta anteriorly and have not yet successfully been transplanted. The surgical attack is therefore directed to the venous system, where the atrial septum may be manipulated, or the pulmonary veins and vena cavae transplanted. Mortality here is as high as 100% in some centres, but the few survivors are

worth the continuation of the efforts. Surgery should be postponed as long as the infant continues to gain weight or remain out of heart failure, for the results are better in the older infants.

The points presented above are recapitulated in Tables 1 and 2. The optimum age for surgery depends on many factors, but in general the sooner a congenital lesion may be repaired the better the opportunity for complete functional recovery and normal sociologic adjustments. The safety factor enters into this, but generally the age factor is eliminated by age 3 or 4. Certain lesions such as large ventricular septal defects are best repaired before extensive pulmonary vascular disease has occurred. There are some definite and some relative contradictions to surgery, some of the more important of which are outlined in Table 2.

Table 1

Optimum Age and Indications for Surgery

Lesion	Elective Age for Surgery	Indication for Surgery	Risk in uncomplicated case—%
Patent ductus	2–4 or less	all	<1
Coaretation	8–10	all	<5
Atrial septal defect	5–6	all	<1
Ventricular septal defect	3–6	20% L-R shunt	2–25
Tetralogy of Fallot	5–10	all	10–50
Pulmonary stenosis	4–6	all if RV> 70 more	<1
Aortic stenosis	5–10	symptoms, strain on EKG	<1
Transposition	required in infancy	all	60–100

Table 2

Contra Indications For Surgery

Lesion:	Complications contra indicating surgery:
Patent ductus	Pulmonary hypertension with right to left shunt.
Coarction of aorta	Age over 40?
Atrial septal defect	Pulmonary hypertension with pulmonary flow less than 1.2 times systemic.
Ventricular septal defect	Pulmonary hypertension with predominant right to left shunt; not necessary in small defects?
Tetralogy of Fallot	None; initial shunt in severe cases.
Pulmonary stenosis	None; not required in asymptomatic case with RV pressure under 70 mm.
Aortic stenosis	None if severe enough to be required.
Transposition	Associated single ventricle or huge ventricular defect.

Diagnosis and treatment in any field is continually changing and this is particularly true in congenital heart disease. Our current management of congenital heart disease follows the pattern outlined, but is certain to change as experience and further progress dictate. Because almost 50% of babies born with heart lesions may fail to reach the age of twelve months, clearly our efforts now need to be directed towards diagnosis and surgery in this younger age group.

Summary

A clinical diagnosis is possible in over 80% of cases of congenital heart disease and laboratory confirmation by heart catheterization and angiocardiography can be a routine and safe procedure.

Surgery is available for over 90% of all cases of congenital heart disease. In most instances total correction of the lesion is possible. Risks are becoming most acceptable, so that the asymptomatic cases are recommended for surgery as well as the obviously sick child. A decision in favor of a serious heart operation in an apparently well child or one with mild symptoms is a difficult one for both physician and parent, but the day is almost here when these lesions will be repaired as routinely as a hernia.

The surgery utilizing a heart lung apparatus in this centre has been proceeding with caution, but this may have been wise for we have been able to profit by the experiences of others. Careful selection of cases has resulted in 100 per cent survival at the time of this presentation.

Radiotherapy

Some Aspects of the Treatment of Cancer of the Breast

T. A. Watson, M.B., Ch.B., D.M.R.
Saskatoon, Sask.

Although cancer of the breast is one of the commonest kinds of malignant disease, and although the literature on its treatment is voluminous, treatment policies, as regards its various stages, vary greatly from centre to centre. This lack of uniformity is undoubtedly due to our present inadequate knowledge of the basic biological behaviour of this disease. It is even claimed by some that none of our present methods of treatment influence the course of the disease, except insofar as troublesome local ulceration, infection, and pain is concerned. To accept such a philosophy, however, is difficult for the clinician who may every day see tangible benefits from therapy, such as long term survival without further evidence of tumour, recalcification of secondary lesions in bone, and marked improvement in physical well-being and function.

The present main methods of attack are surgery, radiation, hormone therapy, chemotherapy and surgical removal of certain of the endocrine glands, employed, according to the stage of the disease either individually or in combination. From a curative point of view only surgery and radiation appear to be of benefit, although other therapeutic approaches may have very considerable palliative value in advanced or recurrent cases.

It is in the earlier group of patients, in which the disease has not spread beyond the breast or axilla, that considerable controversy has arisen recently as to the best method of management. From the point of view of cure this group is, of course, the most important, and my remarks will be mainly directed to this group.

For many years the mainstay of treatment in so-called "operable" cases has been radical mastectomy, with or without pre- or post-operative irradiation. The criteria of "operability" have always varied considerably from surgeon to surgeon and this difference in selection of patients from one centre to another has made comparison of results almost impossible. In recent years dissatisfaction with radical mastectomy has arisen in many quarters because of the subsequent development of local recurrence or distant metastases. Some surgeons have attempted to extend the scope of the "radical mastectomy" to include dissection of the internal mammary lymph node chain and even of the supraclavicular nodes. It is believed that the results of these experiments are not too encouraging. Another approach has been to make surgery much less radical and rely more on radiation treatment. The main proponent of the latter has been McWhirter[13-18] of Edinburgh, who strongly advocates simple mastectomy in "operable" cases, followed by x-ray therapy to the chest wall, axilla, supraclavicular and internal mammary lymph node regions. It has been accepted in some quarters that McWhirter is producing better over-all results in the treatment of breast cancer than those centres whose main reliance is on radical mastectomy in the operable group of patients. Since an increasing number of patients, both on this continent and in Europe, are being treated by McWhirter's method it would seem rather important to attempt to determine whether, in fact, it presents any advantage over radical mastectomy and postoperative radiotherapy.

In many cases the disease, even if apparently early and operable when first seen, has already metastasized, and hence local treatment of any kind is bound to fail. The argument as to the efficacy of local treatments is, therefore, obscured to some extent because this percentage of cases with occult metastases is presumably the same in similar series of patients treated by different methods. If we could segregate "operable" cases, eliminating these patients with occult metastases, then the efficacy of different regimes of treatment could be more easily discerned.

McWhirter[14] claims that simple mastectomy with post-operative radiation is superior to radical mastectomy, with or without radiotherapy, for several reasons. (1) He says that when the disease is confined to the breast dissection of the axilla is superfluous because no disease exists in this region. Unfortunately, if radical mastectomy is performed, even though nodes are impalpable in the axilla pre-operatively, pathological examination shows invasion of the glands to have taken place in twenty to thirty percent of the cases. This contention, therefore, is without practical value. To use the same line of reasoning one could conversely argue that, if the axillary nodes are not involved, then McWhirter's postoperative radiation treatment to this area is superfluous and pointless. (2) When axillary nodes are involved radical mastectomy must be frequently unsuccessful because the axillary chain continues directly into the supraclavicular group of nodes, which is beyond the scope of the operation. He considers that radiation therapy can satisfactorily irradiate secondary deposits, both in the axillary nodes and in the adjacent supraclavicular nodes. It can be argued, however, that in some cases disease has not spread beyond the axilla and these cases should be curable by surgery. If in some patients the disease has already spread into impalpable supraclavicular nodes, then surely these nodes can be as easily treated by radiation after radical mastectomy as after simple mastec-

tomy. It is, therefore, contended that radical mastectomy in this group of patients, followed by radiation therapy, gives the average patient a greater expectation of cure. (3) Radical mastectomy does not include removal of the internal mammary nodes and therefore cannot affect the prognosis of a patient in whom invasion of this region has taken place. Surely, however, internal mammary nodes can be irradiated just as easily after radical mastectomy as after simple mastectomy. (4) McWhirter is afraid that surgical dissection of the axilla may disseminate the disease. There does not appear to be any experimental evidence to support this claim. (5) Postoperative oedema of the arm is common after radical mastectomy, whereas it rarely occurs after simple mastectomy. I do not think that this complication is a serious or particularly common one in modern surgical practice, especially when physiotherapy and arm movements are started shortly after the operation. (4) He states that the institution of radiotherapy must be delayed longer after radical mastectomy than after simple mastectomy, since wound healing takes longer in the former case and the tissues do not tolerate radiation as well. In our practice we usually start postoperative x-ray therapy a few days after radical mastectomy, before the sutures are out, and actually use higher tissue doses than that advocated in Edinburgh. This argument, therefore, does not appear to have any validity. (7) He states that a greater proportion of patients can be treated by his method than by radical mastectomy, since his method can be performed on patients with fixed axillary nodes or when metastases to the supraclavicular nodes have already taken place. It must be conceded that, under these circumstances, radical mastectomy is contra-indicated and that McWhirter's method in these cases is probably the best line of attack. Patients in this category, however, are rather small in number and the adoption of McWhirter's method for them does not in any way prejudice the advocacy of radical mastectomy in truly "operable" cases.

Comparison of the results of treatment of cancer of the breast from different centres is almost impossible because there is no satisfactory yardstick by which selection of cases can be assessed. It is obvious that the results of surgery, with or without irradiation, must be presented on a selected group of patients—those that are in an "operable" stage of the disease. Since criteria of operability vary widely, one can never be sure that two series from different sources are of similar composition. If results are tabulated according to a given system of staging the situation is perhaps improved a little, but it is a well known fact that patients in different centres are notoriously staged differently, even with the same system of classification, since staging depends to a very large degree on clinical impression. Even when results are reported from all cases of the disease seen in one institution, a factor of involuntary selection is still present because there will be a tendency of physicians to refer either the earlier or the later cases to that particular hospital. In order to overcome all these difficulties McWhirter rightly claims that the only valid way of making a comparison between general treatment policies of two centres is to record the fate of all cases of cancer in the breast occurring in the geographic region served by each centre. In this way the previously mentioned factors of selection are eliminated.

There must be some entirely objective method of presentation of data and it is generally agreed that the five-year survival is a suitable criterion in this disease. It is admitted that the five-year survival of a patient does not mean either that she is cured or even that she is free of the original disease at that time, but at least this yardstick can be used as an index of the efficacy of the broad treatment policies employed. In the calculation of the five-year survival rate no patient must be omitted for any reason. If any patient is lost to follow-up and her fate unknown at the end of five years then she must be counted as "dead." Any patient who dies from intercurrent disease within the five-year period, even if there was no clinical evidence of cancer of the breast at the time of death, must also be considered as "dead" from cancer under five years. By this method we are spared the hazard of error in trying to determine at the end of five years which surviving patients are free of disease and which are not, since often the evidence is equivocal. We also do not need to make any arbitrary decisions as to whether deaths under the five-year period were due to the disease or from some unrelated cause.

Using these criteria, there are very few areas in the world from which such data can be obtained. McWhirter[13, 14] states that southeast Scotland is one such area, and in this region from 1941 on virtually all cases of cancer of the breast have been referred to the Edinburgh Royal Infirmary. We claim that a similar situation exists in Saskatchewan, by virtue of the two Cancer Clinics in the province and, by employing identical methods of testing this hypothesis as McWhirter has used, we have shown that the coverage in Saskatchewan is probably nearer one hundred percent than in Edinburgh[21].

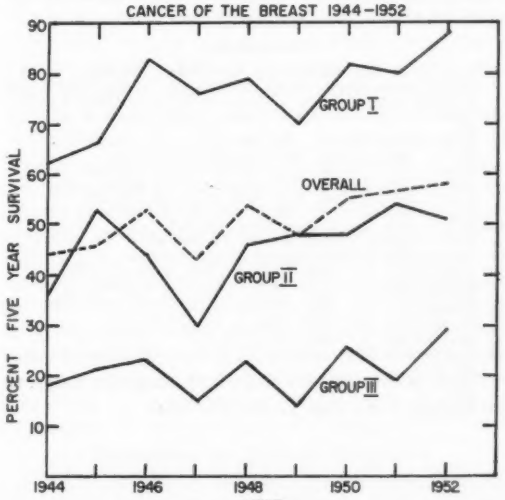
It is not widely realized that in presenting McWhirter's percentage of five-year survival of cancer of the breast, no comparison can be made with almost any other series because of the different constitution of the original material. It is hard, therefore, to understand why McWhirter's figures were accepted with such acclaim when there was no method of comparing his results with others.

Two Cancer Clinics were established in Saskatchewan in 1932, and in 1944, by a provincial act,

cancer diagnosis and treatment through these two Clinics became free to residents of the province. Since the latter date almost all cases of cancer of the breast occurring in the province have been seen, or registered, in one of these Clinics. From 1944 until 1952, 1,276 cases of cancer of the breast were registered, and of these 1,055 had received no previous active treatment. The five-year survival in these cases was 52% (546 cases)[21]. If we also consider the patients who were registered in the Clinics, but who had received treatment prior to registration, there is very little effect on this figure —in fact it is increased a little[21].

From 1941 to 1947 McWhirter[18] reported a five-year survival of 42%, out of a total number of patients of 1,882. All of these patients were untreated prior to admission, the ones who had received treatment before admission being excluded from this figure. The Saskatchewan figures, therefore, show an improvement of about 25% compared with McWhirter's cases.

During the period 1941 to 1947 the main treatment policy in Edinburgh was to perform simple mastectomy, followed by postoperative x-ray therapy to the axilla and supraclavicular region, and to the chest wall, including the internal mammary chain. It should be emphasized that not all patients were treated by this method, in that patients appearing originally with advanced disease would receive treatment of a more palliative nature.



In Saskatchewan, from 1944-52, the treatment policy for most "operable" cases was radical mastectomy, usually followed by postoperative x-ray therapy. During most of this period the postoperative x-ray therapy to the axillary and supraclavicular regions was delivered in a manner similar to that of McWhirter's irradiation method, when the axillary nodes were found to be involved at operation. If the axillary nodes were found on pathological examination, following radical mastectomy, to contain no metastatic disease, usually no post-operative radiation treatment was given. Patients in whom the disease had advanced beyond the scope of radical mastectomy were treated by other methods.

The method of preparation of results in the Saskatchewan figures has followed McWhirter's criteria exactly[21], and since the composition of the two series demonstrates similar lack of selection[21], then one is forced to the conclusion that radical mastectomy, with postoperative radiation under certain circumstances, is superior to simple mastectomy with postoperative radiation in the treatment of cancer of the breast.

One possible objection to this conclusion may be that patients present themselves at an earlier stage of the disease in Saskatchewan for treatment. McWhirter[18] states that 15% of his cases showed distant metastases when first seen. The comparable figure in Saskatchewan is 13%. It is possible that this difference may be accounted for to some extent by different methods of assessing "distant metastases." However, since McWhirter has claimed that five-year survival results must be compared on the basis of the total experience in one geographic area, and without other qualifications, such an argument should carry no weight.

A more fundamental objection to our present methods of the treatment of cancer of the breast has been raised in some quarters. This contention is that treatment does not influence the course of the disease. Park and Lees[20] have claimed that it has not been proven that survival rate of cancer of the breast, using the five-year survival rate as an index, is affected by treatment at all. McKinnon[3-12] of Toronto states that the age specific mortality cancer rates in various countries, states and provinces has been relatively unchanged for the last thirty years and that, therefore, our continued efforts over this period of time to treat patients in the earlier stages has been a failure.

There have been several studies on the five-year survival rate on patients suffering from cancer of the breast who, for one reason or another, have not received any treatment. Daland[1], Greenwood[2], and Nathanson and Welsh[19] have all reported survival rates of 16 to 22%. However, in all of these articles the survival rate was calculated as from the date of onset of symptoms — not from the date of first diagnosis or treatment, as is the case in reports dealing with the results of treatment of cancer of the breast. These percentages may be compared with the Saskatchewan percentage of 52% survival of all cases seen, calculated from the date or diagnosis of treatment, whichever was later. In one of these series (Daland) the average delay from diagnosis to onset of symptoms was 18.3 months and the five-year survival, therefore, from the date of

diagnosis, as read from Daland's published graph, would be of the order of 15%, rather than the figure of 22% from the date of onset of symptoms. It is not clear from these papers just how many of the patients reported were in the later stages of the disease when first seen.

McKinnon[11] contends that there are two kinds of breast cancer, indistinguishable histologically, the first being "non lethal" or "non metastasizing" or "non progressive," and the second a true cancer termed "lethal," "progressive," or "metastasizing." This latter kind is uninfluenced by treatment and sooner or later will always cause death in the patient. The first type is not really a cancer at all and can be cured by local removal. To test this hypothesis all the primary cases of cancer of the breast seen in the Saskatchewan Cancer Clinics from 1944 to 1952 have been divided into three groups (Table I). The first group comprises those

Table 1
Cancer of the Breast
1944-52 — All Primary Cases

	No. of Patients	5 year Survival
Group I	397	78%
Group II	397	46%
Group III	261	21%
Total	1,055	52%

patients in whom the disease appeared to be confined to the breast at the time of treatment. In the second group metastasis to the axillary nodes had occurred, the primary tumour in the breast still being "operable." In the third group the disease had spread beyond the axilla and the breast. If we now accept McKinnon's hypothesis that some cancers of the breast are not "metastasizing" and therefore not lethal, we should exclude our group I from the whole series. The remaining cases are listed in Table II. It will now be seen that the five-year survival of all the later cases is 36%, which is very considerably in excess of the figure

Table 2
Cancer of the Breast
5 Year Survival (Excluding Early Cases) — 1944-52

	No. of Patients	5 year Survival
Group II	397	46%
Group III	261	21%
Total	658	36%

of approximately 15%, as calculated from the date of diagnosis, found in untreated series of cases. It would thus seem that treatment, even when the scales are heavily weighted against it, in that the untreated series contained some early cases, has contributed a considerable amount to the five-year survival rate.

Further support for this argument is seen in graph one, in which the five-year survival rate for patients in each group is plotted for each year from 1944 to 1952. It will be seen in groups one and two particularly that there seems to be a tendency for a higher five-year survival rate in the later years and this trend is also apparent in the over-all rate for each year. Possibly over this period treatment, both surgical and radiotherapeutic, has become more efficient, contributing to higher five-year survival rates. If treatment does not influence the five-year survival rate then the survivals for each individual year should remain relatively unchanged from year to year.

Conclusions

1. Radical mastectomy, followed by radiation therapy when axillary nodes are found to be involved, produces a higher five-year survival rate in cancer of the breast than does simple mastectomy and postoperative x-ray therapy as advocated by McWhirter.

2. Treatment of the disease produces a much higher five-year survival percentage than no treatment at all.

References

1. Daland, E. M.: 1927, Surg. Gyn. Obst., 44: 264.
2. Greenwood, M. A.: 1926, Reports on Public Health and Medical Subjects, No. 33. London: H.M. Stationery Office.
3. McKinnon, N. E.: 1949, Canad. Pub. Health J., 40: 247-269.
4. Idem: 1949, Canad. Pub. Health J., 40: 341-347.
5. Idem: 1950, Canad. Pub. Health J., 41: 7-14.
6. Idem: 1950, Canad. Pub. Health J., 41: 230-240.
7. Idem: 1951, Canad. Pub. Health J., 42: 88-94.
8. Idem: 1941, Canad. Pub. Health J., 42: 218-223.
9. Idem: 1941, Canad. Pub. Health J., 42: 259-366.
10. Idem: 1952, Surg. Gyn. Obst., 94: 173.
11. Idem: 19544, Lancet, Lond., 266: 251-254.
12. Idem: 1955, Canad. M. Ass. J., 73: 614-625.
13. McWhirter, R.: 1948, Proc. R. Soc. Med., 41: 122.
14. McWhirter, R.: 1948, Brit. J. Radiol., 21: 599.
15. McWhirter, R.: 1949, Amer. J. Roentgenol, 62: 335.
16. McWhirter, R.: 1950, Brit. J. Cancer, 4: 368.
17. McWhirter, R.: 1954, Brit. J. Radiol., 27: 649.
18. McWhirter, R.: 1955, ibid., 28: 128.
19. Nathanson, I. T. and Welch, C. E.: 1936, Am. J. Cancer, 28: 40-53.
20. Park, W. W. and Lees, J. C.: 1951, Surg. Gyn. Obst., 93: 129.
21. Watson, T. A.: 1959, Lancet, 1191-1196.

Ophthalmology

The Manitoba Branch of the Eye Bank of Canada

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History of Corneal Grafting

For nearly two hundred years the idea of replacing a hazy cornea with a clear corneal graft has challenged ophthalmologists. Innumerable experiments have been done and hundreds of animals have been sacrificed. But these labours have not been in vain because the principles of corneal grafting are now established.

Throughout the nineteenth century ophthalmologists dreamed of restoring sight by grafting a clear animal cornea to a person blinded by corneal disease. Not until the turn of this century was it appreciated that corneal grafts would remain clear only when the donor material was of the same species as the host. Heteroplasty has been abandoned: homoplasty is now accepted as offering the only hope of success. Human cornea must be grafted to human cornea.

It was in 1911 that Magitot first clearly stated this principle and also described the preservation of a donor eye. He stored the eye in blood serum at 5° C. for 8 days and then used the cornea for a lamellar graft. The graft remained clear, and corneal grafting as we know it today was born.

Since then corneal grafting has been performed in centres all over the world. In 1930 Elschnig of Prague reported favourably on the results of nearly 200 operations. This work stimulated Filatov of Odessa and he began a series of studies upon the subject. By 1945 he was able to report on the results of 842 corneal grafting operations. These early workers demonstrated that if eyes are removed within a few hours of death, the corneae may be used successfully for grafting. The operation has now passed from the experimental phase to become an accepted surgical procedure, and the principles laid down by these pioneers have been confirmed by workers in many countries (Castroviejo[3]).

Indications for Corneal Grafting

The eye is like a camera. Light passes through the cornea and lens and is brought to a focus on the retina. It is obvious that the image can be focussed clearly only if the media, i.e., the cornea, aqueous, lens and vitreous, of the eye are clear. Diseases of the cornea may cause it to become hazy so that sight fails. When corneal disease interferes with the clarity of the cornea and causes loss of sight, corneal transplantation is indicated.

It is useful to consider the indications for keratoplasty in three groups:

1. Optical
2. Therapeutic
3. Cosmetic

1. Optical

Defective sight in otherwise healthy eyes may be caused by certain dystrophic or degenerative conditions of the cornea, by inflammations such as interstitial keratitis, and by conical cornea. In these cases the aim of the operation is to remove the defective area of cornea and to replace it with a clear healthy piece of cornea.

2. Therapeutic

The French school of ophthalmologists[4] deserves the credit for demonstrating the therapeutic value of transplantation in such diseases as corneal abscess, recurrent herpatic keratitis and recurrent corneal ulceration. It often appears that a graft has a therapeutic effect in causing inflammation to subside rapidly. Filatov believed that the donor tissue aids the clearing of hazy host cornea surrounding the graft.

3. Cosmetic

A disfiguring scar or growth on the cornea may be removed and replaced with a clear disc of cornea. If the eye is amblyopic or defective in any other way, the operation will not restore sight. Its aim is solely to improve appearance.

Figure 1
Lamellar or Superficial Corneal Graft

If the disease is confined to the outer layers of the cornea a superficial disc may be cut out and replaced with a graft. This is known as a lamellar or superficial keratoplasty. The diameter of the disc may be of any size from 5 mm. to the whole width of the cornea which is about 11 mms.

When a graft is done for therapeutic purposes the superficial type is usually tried first. Although the cornea seldom becomes completely clear after this type of surgery, it is always wise to wait for six to nine months because of surprising degree of clearing may occasionally occur. If at the end of this time the cornea is still cloudy, a full thickness graft should be done in an attempt to obtain a good result.

* Winnipeg Clinic.

Figure 2
Penetrating or Full Thickness Corneal Graft

When the whole thickness of the cornea is involved, a lamellar graft will not remove all the affected tissue. A full thickness or penetrating graft is therefore required. This operation is more hazardous and more delicate to perform than a superficial graft. If the graft does not fit the hole in the host exactly, there is a risk of aqueous leaking through the wound. This may lead to prolapse of the iris, intraocular infection, or to secondary glaucoma. But if it is successful, the full thickness graft is more likely to be clear and to give good sight. Again the diameter of the disc may vary from 5 mms. to 8 mms. or even more.

Various modifications of these basic patterns of graft may be used. A peripheral strip of cornea may be transplanted. Square grafts have been used by Castroviejo.

When a small central area of cornea is cloudy, it has sometimes been excised and transplanted to the periphery. A peripheral disc is then transferred to the centre. This is a most effective procedure, for it requires no donor and there is no risk of an antigen-antibody reaction.

Results of Keratoplasty

The visual result of an operation depends not only upon technical skill and a fresh, healthy graft, but also upon the nature and extent of the corneal disease. The state of the host cornea surrounding the graft is important. New blood vessels and cloudiness in the surrounding host cornea lessen the chances of the graft remaining clear. If the whole of the diseased tissue can be removed so that the graft is surrounded by clear healthy cornea, the operation is more likely to be successful.

In general it may be stated that about 25% of patients should see 20/120 or better. Most will require glasses to obtain best vision and, in some cases, contact lenses may give remarkable improvement in sight.

The Use of Vitreous

Cadaveric vitreous is now being used in the treatment of retinal detachments. By injecting it into the vitreous cavity the detached retina may be forced back into apposition with the choroid. Unlike saline or cerebrospinal fluid which has been used by some operators, cadaveric vitreous is not absorbed and thus it acts as a permanent internal splint bracing the retina back against the choroid and sclera. It does not cause allergic reactions nor is there a great risk of intraocular infection.

Purpose of Eye Banks

The incidence of corneal disease is high where standards of nutrition and hygiene are low. Hence there is a great need for corneal transplantation in the Middle and Far East. In the West, corneal disease occurs less commonly. Nevertheless, corneal grafts are required fairly often.

Although keratoplasty is an accepted procedure its performance is hindered by lack of corneal material. In many centres on this continent it is not unusual for patients to wait six months or even one year before a donor can be obtained. The reason for this poor supply of grafting material is not far to seek.

By law the body of a deceased person becomes the property of the next of kin, and the written permission of the next of kin for the removal of the eyes must therefore be obtained, even if before death the deceased expressed the wish that they be donated. The person who is next of kin is therefore able to reverse the expressed wish of the deceased person.

Several difficulties thus arise. Firstly, in the presence of natural grief the doctor hesitates to ask relatives if he may remove the eyes from the body of the deceased. Secondly, the next of kin feels that other members of the family should first be consulted, since it might be considered by them to be an act of desecration. Some fear that removal of the eyes may result in mutilation which will be obvious if relatives or friends wish to view the body at the funeral service. This fear is quite unfounded because the sockets are filled with artificial eyes or with cotton and the lids are closed. However, for these reasons, permission for removal of the eyes is often refused, or granted after so long a delay that the corneae have decomposed and become useless for corneal grafting. If the corneae are to be of value the eyes must be removed within a few hours of death. In most centres eyes are considered to be useful up to ten hours; but obviously the sooner they are removed the clearer and better the corneae will be for grafting purposes.

In an attempt to solve the problem of the supply of corneal material the Eye-Bank for Sight Restoration was incorporated in New York in 1945. In England a Corneal Grafting Act was passed in 1952 and Eye Banks were established in all regional centres.

The Eye Bank of Canada was started in Toronto in June 1956, with Dr. Hugh L. Ormsby as Medical Director. The Canadian National Institute for the Blind undertook its administration. Since its inception, branches of the Bank have been established in Montreal and Vancouver. The Manitoba branch was started in March 1959 at the request of the Eye Section of the Manitoba Medical Association. Mr. S. J. Evans of the Canadian National Institute for the Blind, Portage Avenue, Winnipeg, (Phone SP 4-5421) is the administrator.

Eye Banks have the following functions:

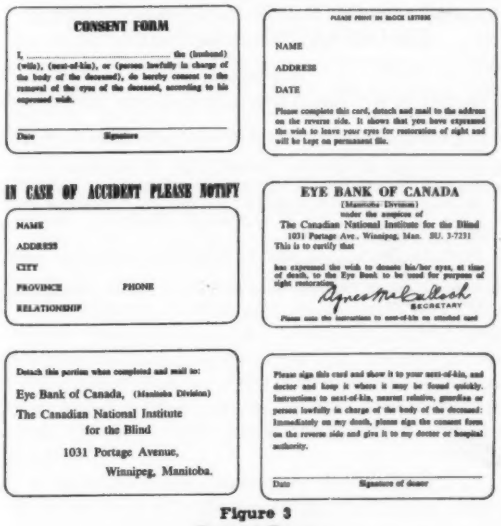
a) To make the public aware of the need of donations of eyes by publicity.
b) To keep a list of donors.
c) To keep a record of patients requiring corneal grafts.
d) To collect and deliver donated eyes.
e) To arrange preservation and storage of ocular tissues.
f) To undertake research wherever possible.

a) Publicity

By means of publicity in newspapers and on radio and television the public is made aware of the need of a supply of fresh cadaveric eyes. On this continent the Lions Clubs have made Eye Banks and eye care their particular concern. In many centres they have done great service to the community by raising money and gaining public support for this project. In Winnipeg the local Lions Clubs are very interested in our Eye Bank and they have already done much to spread information about it, and to give it financial support through the Canadian National Institute for the Blind.

b) Record of Donors

In order to facilitate the speedy collection of eyes a donor card has been devised.


CONSENT FORM

I, ... the (husband) (wife), (next-of-kin), or (person lawfully in charge of the body of the deceased), do hereby consent to the removal of the eyes of the deceased, according to his expressed wish.

Date Signature

PLEASE PRINT IN BLOCK LETTERS

NAME

ADDRESS

DATE

Please complete this card, detach and mail to the address on the reverse side. It shows that you have expressed the wish to leave your eyes for restoration of sight and will be kept on permanent file.

IN CASE OF ACCIDENT PLEASE NOTIFY

NAME

ADDRESS

CITY

PROVINCE PHONE

RELATIONSHIP

EYE BANK OF CANADA
(Manitoba Division)
under the auspices of
The Canadian National Institute for the Blind
1031 Portage Ave., Winnipeg, Man. SU. 3-7231
This is to certify that

has expressed the wish to donate his/her eyes, at time of death, to the Eye Bank to be used for purpose of sight restoration.

Agnes McCulloch
SECRETARY

Please note the instructions to next-of-kin on attached card

Detach this portion when completed and mail to:

Eye Bank of Canada, (Manitoba Division)
The Canadian National Institute
for the Blind
1031 Portage Avenue,
Winnipeg, Manitoba.

Please sign this card and show it to your next-of-kin, and doctor and keep it where it may be found quickly. Instructions to next-of-kin, nearest relative, guardian or person lawfully in charge of the body of the deceased: Immediately on my death, please sign the consent form on the reverse side and give it to my doctor or hospital authority.

Date Signature of donor

Figure 3
Consent Form

It will be seen that this card requires the signatures of the donor and also of the next of kin. This acquaints the family with the donor's wishes and eliminates the necessity of obtaining permission after the death of the donor.

An important principle has been established in all Eye Banks and it is followed in Winnipeg. The source of the material is never revealed to the recipient and the donor's relatives are not told who received the graft. In this way undesirable financial and legal complications are avoided.

It would be appreciated if all doctors who read this would themselves sign a donor card. They may be obtained from the C.N.I.B. (SP 4-5421). It is hoped that the eyes thus promised will serve their present owners for many years but the signing of the card now may benefit someone else in the future.

c) List of Patients Requiring Keratoplasty

When an eye surgeon in Manitoba has a patient who requires keratoplasty, he should give the Canadian National Institute for the Blind the name and address of the patient. These names are recorded in strict order.

When cadaveric eyes become available the patient who is next on the list is notified by his doctor. When the operation is completed the next surgeon on the list is alerted by the Canadian National Institute for the Blind so that he may advise his patient to be prepared for a sudden call.

d) Collection of Eyes

The sooner the eyes are removed after death the better. Ten hours is the extreme limit. After this time the eyes are valueless. If the weather is warm and no refrigeration facilities are available, the eyes decompose sooner. The eyes should be removed under sterile conditions with the same aseptic technique as is used for a standard surgical procedure. It is best to do the enucleation in an operating room, but if this is not possible, it should be done under the closest approximation to sterile conditions, using sterile instruments, cap, gown, mask and drapes as in an ordinary eye operation.

Each eye should be put in a sterile container on the bottom of which there is a piece of dental cotton bent to form a circle and moistened with sterile normal saline. The eye should be placed on the cotton with the cornea facing upwards so that the epithelium is not damaged. The container should then be put into a wide mouth vacuum flask containing ice.

Containers and flasks are delivered on request by the Canadian National Institute for the Blind. The institute maintains a 24 hour service. When the eyes have been removed, the Canadian National Institute for the Blind will collect them immediately. They will be cultured to check bacterial sterility and delivered to the eye surgeon whose patient is next on the list.

e) Preservation and Storage of Ocular Tissues

It is obvious that if cadeveric eyes could be preserved for several months, keratoplasty would cease to be the urgent procedure it now is. It would become an operation which could be performed at any time convenient to patient and surgeon. Much work has been done on this subject in Toronto and Washington and we have carried out experiments in Winnipeg[5]. It has been shown that the cornea can be frozen and stored and used several months later for lamellar grafts, but cornea preserved by present methods is useless for penetrating grafts.

Despite all the investigation that has been undertaken, eye surgeons still prefer to use fresh corneal material and they use preserved material only if no fresh tissue is available.

The storage and preservation of vitreous has proved to be an easier matter. It may be stored indefinitely under sterile conditions at 4° C. Contrary to expectations, bacteria infecting vitreous tend to perish when it is stored in this way[6]. The use of vitreous in retinal detachment surgery is therefore not attended by a great risk of infection. The demand for vitreous is increasing, and it has been shown that it may be utilized with safety and success months or even years after collection when stored at 4° C. We maintain a supply of sterile vitreous for use by ophthalmologists in the treatment of retinal detachment and other conditions.

It is possible that, in the future, sclera and conjunctiva will be stored for use in the treatment of various diseases.

f) Investigation

In some centres Eye Banks confine their activities to the collection and delivery of eyes. In Winnipeg there has already been some investigation into the preservation and storage of vitreous and cornea[5, 6, 7]. It is hoped that these investigations will be continued and extended in collaboration with Professor J. C. Wilt and Dr. W. L. Parker of the Virus Laboratory of the University of Manitoba and the Winnipeg General Hospital. The Canadian National Institute for the Blind has generously agreed to support the cost of technical assistance and incidental expenses for this purpose.*

Donations and Operations During the First Year

During the past year 33 donations resulted in 66 eyes being received by the Eye Bank. Twenty corneal graft operations have been performed. There are at the time of writing four patients awaiting the donation of suitable eyes.

It might be thought that there is much discrepancy between 33 donations and only 20 operations. Unfortunately some corneas were found to be unhealthy and others were found to be infected with staphylococci or other organisms.

Occasionally it proves impossible to get the patient into the hospital before the cornea has decomposed. Moreover, the graft must fit exactly, especially in penetrating grafts, so it is essential that it be cut as perfectly as possible. Even in the most expert hands an error in cutting may sometimes occur. We therefore like to have two eyes available at each operation, although this may result in some wastage of corneal material.

Your Co-operation is Essential

If the Eye Bank is to continue to flourish, the help of all—doctors and public alike—is required. It is hoped that whenever a patient is nearing death and the family is likely to consider the donation of eyes the physician will immediately contact Mr. S. J. Evans or Miss A. McCulloch, at the Winnipeg Branch of the Canadian National Institute for the Blind (SP 4-5421). They will be pleased to give advice and make all necessary arrangements.

PLEASE GIVE THE EYE BANK YOUR CO-OPERATION AND SUPPORT

* We are indebted to Westeel Products of Winnipeg for the generous donation of rabbit cages.

References

1. Rycroft, B. W., Corneal Grafts, London 1955. Butterworth & Co.
2. Paton, R. T., Keratoplasty, Blakiston Civ. New York 1955. McGraw-Hill Book Co.
3. Castroviejo, R., Tr. Am. Ophth. Soc., 47: 183, 1949.
4. Paufique, L., Sourdille, G. P. and Offret, G.: Les Greffes de la Cornée (Keratoplasties), Masson and Cie, Paris, 1948.
5. Reed, H., Stanfield, F. J. and Nagel-Leindl, L.: Manitoba M. Rev., 40: 34, Jan. 1960.
6. Reed, H., Wilt, J. C. and Tushingham, A. M. A.: Arch. Ophth., 60: 361-365, 1958.
7. Reed, H. and Tushingham, A. M. A.: Arch. Ophth., 62: 780-781, 1959.

Otolaryngology

Diagnosis and Treatment of Otosclerosis

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Otosclerosis is an unique pathological disturbance affecting the labyrinthine capsule. In the majority of cases the disease foci are bilateral but not necessarily symmetrical. Otosclerosis resembles, somewhat, the lesions found in Paget's or von Recklinghausen's disease.

The replacement of normal bone by the disease process may produce a conductive deafness as the stapes becomes fixed or ankylosed to the margins of the oval window. Less commonly, involvement of the inner ear produces cochlear degeneration, with resultant perceptive or nerve deafness. Indeed, a mixed deafness may eventuate if both the conductive and receptor mechanisms are involved in the disease process.

The Historical Observations of Gross and Microscopic Pathology

In 1893, Politzer stated categorically, "Deafness which had previously been attributed to chronic interstitial middle ear catarrh with secondary stapes ankylosis is in reality a primary disease of the labyrinthine capsule." This statement would eventually change the course of otologic surgery throughout the world and the surgical techniques, subsequently developed, would bring a large measure of auditory rehabilitation to a great many deafened individuals. Politzer's observations were the results of 16 deafened cases examined during life and studies histologically after death.

Valsalva is credited with observing fixation of the stapes (grossly) in deafened individuals as early as 1735. Many others, such as Morgagni (1766), Bezold (1885), and Gradenigo (1887), confirmed Valsalva's original observations. Perhaps the most outstanding observer was Toynbee in 1857, "who noted that in 1,659 ear dissections, osseous ankylosis of the stapes to the fenestra ovalis (oval window) was one of the common causes of deafness."

It is evident that anatomists and otologists alike, from the time of Valsalva (1735) to Politzer (1893), were well aware of the association of conductive deafness with fixation of the stapes. However, all, until Politzer, believed that fixation of the stapes was secondary to changes in the mucosa of the middle ear.

The term "otosclerosis" was introduced by von Troltsch in 1881. He, likewise, was mistaken, believing that fixation of the stapes resulted from chronic sclerosis or dry catarrh of the mucous lining of the middle ear. Insofar, as the disease process consists of vascular, porous, and spongy bone, much less hard than the bone it replaces, it is evident that the term "otosclerosis" is a misnomer.

Early in this century, Siebenmann suggested the term "otospongeosis" as being more histologically accurate. This terminology, unfortunately, has not been generally accepted other than as a synonym for otosclerosis.

Despite the histological evidence presented by Politzer, clinicians were, for many years, loathe to accept these observations and persisited in the mistaken belief that stapes fixation was secondary to changes in the mucosa of the middle ear. A few courageous surgeons, such as Jack in 1902, Holmgren in 1916, and Sourdille in 1924, were attempting removal of fixed stapes or trephination of the promontory or fenestration of the semi-circular canal. All were bringing forth new evidence substantiating the observations of Politzer; but, unfortunately, to a resistant profession.

Lempert's monumental one-stage fenestration of the horizontal semi-circular canal for the restoration of hearing in clinical otosclerosis burst brilliantly on a less resistant, but not wholly receptive otological audience in 1938. The fifty year drouth in otology had passed and the golden age was commencing. The genius of Lempert was not to be denied. He and his followers have substantiated, unequivocally, the contentions of Politzer; namely, that otosclerosis is a primary focal disease of the labyrinthine capsule.

Today, all otologists recognize otosclerosis as a primary labyrinthine disease that accounts for most of the cases of chronic progressive, conductive hearing losses in adult life.

The Incidence of Otosclerosis

Clinically and histologically the incidence of otosclerosis varies in the population and reliable statistical evidence is difficult to obtain. Histological otosclerosis was found in 10 percent of white adult ears examined by Nager in 1939. Guild in 1,161 routine autopsies found an otosclerotic foci in 8 percent of white persons, 10 years of age or older, and in 1 percent of Negroes. Perhaps, more significantly, in Guild's figures is the histological incidence of otosclerosis in 12 percent of white females and a 6 percent incidence in white males.

Wolff quotes Engstrom as finding 12 cases of histological otosclerosis in 100 temporal bone dissections, Weber as finding 56 cases in 500 temporal bones, and herself as finding 10 cases in 350 pairs of temporal bones.

In about 80 percent of cases, the lesion is bilateral and usually, but not necessarily, symmetrical. The disease foci must involve the footplate of the stapes in order to produce the characteristic symptoms. It is evident, therefore, that many people live and die with histological otsoclerosis, without involvement of the stapes and therefore without deafness and completely unaware of the morbid possibilities they possess.

Pathology of Otosclerosis

The reader may obtain detailed pathological descriptions from the works of Guild, Ruedi, Nylen, Covell and Wolff.

Suffice to state that normal bone is absorbed and replaced with spongy, osteoid bone at one, or infrequently, more than one site. The foci stain more deeply with H & E stain than the surrounding capsule. The tissue varies from loose, spongy, irregularly arranged lamellae of new bone separated by vascular marrow spaces and containing osteoblasts and osteoclasts to dense bone which is relatively avascular. The disease spreads along the blood vessels as finger-like projections. These areas stain deeply with H & E and are called "blue mantles of Manasse," and are believed to represent the early stages of the otosclerotic process.

The lesion commences in the middle, or enchondral layer of the labyrinthine capsule and spreads outward to the periosteal layer or less frequently to the endosteal or inner layer of the labyrinthine capsule. The commonest site is just in front of the oval window, the so-called "fistula ante fenestram," named by Siebenmann. This connective tissue cleft is surrounded by unossified cartilage in the infant and the unossified cartilage may persist in adult life. As a late formation of bone may replace these cartilagenous remnants, it is suggested that this transformation of tissue may constitute the incipient otosclerotic foci. The proximity to the footplate of the stapes explains the ankylosis which develops later.

The foci of otosclerosis is found in the region anterior to the oval window (site of predilection) in 80 to 90 percent of ears with otosclerosis. The region of the round window is involved in 30 to 50 percent of the cases. Primary foci may also be found in the stapes footplate, the cochlea, the internal auditory meatus and the semi-circular canals.

Figure 1: is a cross section of the temporal bone showing the otosclerotic foci, staining deeply and lying anterior to the oval window niche in the so called site of predilection.

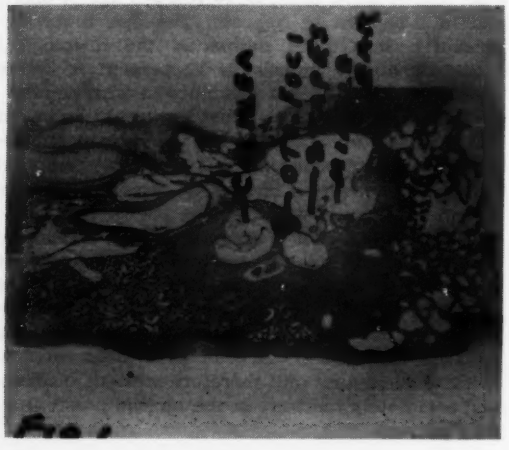


Figure 2: is a cross section of a normal stapes separating the middle ear from the inner ear. A soft annular ligament maintains the footplate of the stapes in the oval window.

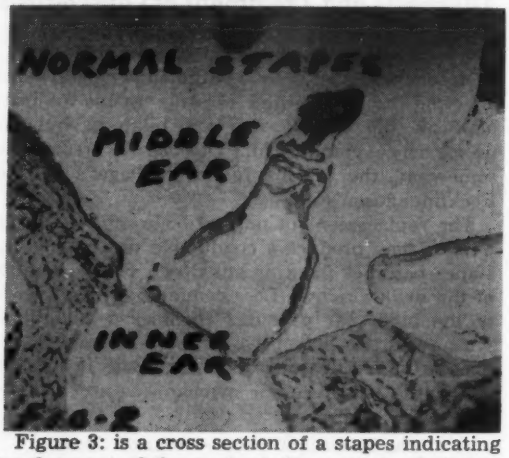
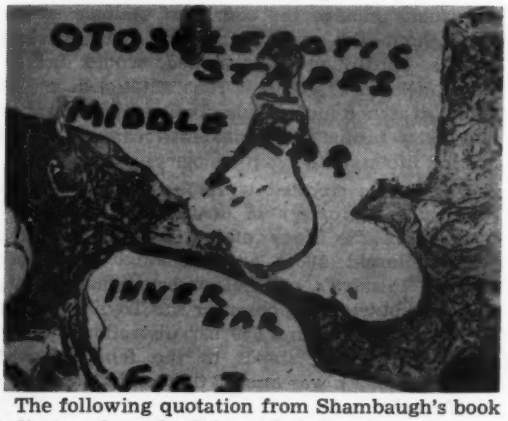


Figure 3: is a cross section of a stapes indicating involvement of the oval window and the footplate of the stapes with a dense otosclerotic lesion. Air borne sound waves cannot be transmitted, normally, from the middle ear to the nerve elements of the inner ear because of the dense lesion surrounding the footplate of the stapes.



The following quotation from Shambaugh's book indicates the splendid work being done by otological pathologists and perhaps of greater import the knowledge derived from these histological reports has aided the audiosurgeon in determining the type and extent of surgery necessary to reestablish ossicular continuity between the ear drum and the inner ear or to bypass and circumvent the otosclerotic lesion.

"Ruedi and Spoendlin report 88 ears with otosclerosis, 79 with a focus at the site of predilection sufficiently large to interfere with the movements of the stapes. Of the 79 with stapes fixation, 51 showed fibrous fixation, 21 of these without compression or subluxation of the footplate, and 30 with fibrous fixation combined with compression

and subluxation of the footplate produced by the pressure of the enlarging otosclerotic focus. In 28 of the 79 ears with stapes fixation there was a bony ankylosis, confined to the anterior and of the footplate in 7, and invading and replacing a large part or all of the footplate in 21 ears. Especially interesting are 12 ears with otosclerotic bone replacing part or all of the footplate but with fibrous fixation only. Thus we see that otosclerotic stapes fixation is more often the result of fibrous fixation, usually with compression and subluxation, than of an actual bony union between the footplates and margins of the oval window. Very likely the unstable bone of an active focus might grow across the annular ligament producing a bony union only to resorb and be replaced at least for a time by a fibrous union, accounting for the spontaneous improvements in hearing sometimes observed in the early stages of clinical stapes fixation."

It is evident, therefore, that approximately two-thirds of otosclerotic stapes fixations are of a fibrous type and in only one-third of the cases is the fixation due to bony ankylosis.

This should indicate to any thinking audiosurgeon that radical surgery at the footplate of the stapes is not necessary in every case. Indeed, radical stapedial footplate surgery and stapedectomy are definitely hazardous procedures which should only be performed when simpler methods have failed.

Hereditary Influences in Otosclerosis

Heredity, undoubtedly plays an important role in the incidence of the disease. It has been reported in identical twins with the deafness, manifesting itself simultaneously in the pair. The disease appears to be a reaction in the otic capsule to one or more, as yet, undetermined causes.

If both parents have otosclerosis the chances of the children having it are high; whereas, if only one parent has otosclerosis the chances of the children having it are unpredictable. If both parents have otosclerosis, nearly all of the female offspring will suffer some degree of deafness; whereas, only half the male offspring will manifest the disease.

Fowler states in Jackson's book: "The least objectionable hypothesis is: otosclerosis develops under environments that favor it whenever the subject harbors a condition that combines two dominant factors: (1) factor (X) which lies in the sex chromosome and, (2) a factor (A) which lies in one of the autosomes. It is suggested that the latter modifies the mesenchyme reaction, especially that of the osteoblasts and osteoclasts. Sex-linked genes act differently as between the sexes, and may thus possibly affect calcium metabolism. Deficiencies in the mesenchyme occasionally occur in other places than in the otic capsule, and thus tend to be associated with exostoses, brittle bones, blue sclera, and otosclerosis."

History of the Deafness in Clinical Otosclerosis

1. The duration of the deafness before requesting otological aid is usually 5 - 10 years.

2. The deafness is progressive, gradual or step-like in character.

3. The deafness is eventually bilateral in most cases (about 80 percent).

4. There is frequently a prodromal tinnitus with normal hearing for one or two years.

5. The tinnitus is concomitant with the deafness in most instances.

6. Vertigo may be present if the receptor mechanism is involved by the lesion of otosclerosis. It is not a common symptom and is usually minimal in degree.

7. The hereditary influence: There is usually more than one member of the family affected.

8. The sex incidence: Probably about three times as common in the female as in the male. The deafness frequently presents with a pregnancy but not necessarily the first pregnancy.

9. Paracusis: The patient hears better in a noisy environment. The normal person raises the voice in noisy surroundings and overcomes the ambient noise level. In many instances, this is sufficient to reach the threshold of the otosclerotic deafened individual who then hears relatively well.

10. The conductively deafened individual hears and understands speech relatively well over a telephone. A perceptive deafened individual, on the other hand, does not understand speech any better over a telephone or with amplification than in ordinary conversation.

11. In the early stages of disseminated sclerosis there is frequently a loss of vision with minimal changes in the ocular fundus. It has been said, "The patient sees nothing, and the physician sees nothing (in the fundus)." The otosclerotic individual speaks so very, very quietly it may be said, "The patient hears poorly and the physician hears the patient poorly."

Physical Signs and Tests for Otosclerosis

1. The ear drum is normal in appearance. In the very acute cases there may be a "flamingo-pink" tinge observed through the drum. This is due to hyperemia of the promontory and is a very rare exception to the normality of the ear drum usually observed.

2. Cochlear nerve function.

(a) The air conduction audiogram indicates an essentially flat curve threshold 40-60 decibels below normal. Initially, the low tones are depressed to a greater extent than the high tones. This is due more to stiffness of the stapes footplate than to actual fixation. A basic flat curve indicates stiffness plus mass as the otosclerotic foci increases in size and fixes the stapes in the oval window. However, in long standing cases, there may be an associated high tone loss indicative of cochlear degeneration.

(b) The bone conduction audiogram is essentially normal. In long standing or acute cases, there may be some depression for the higher tones indicative of cochlear degeneration.

A differential of 25 decibels or more between air and bone conduction is necessary if classic fenestration surgery is to be advised. Stapes surgery, on the other hand, may be advised, in selected cases, if the air bone gap is 15 decibels or more.

3. The tuning fork tests with frequencies 512-2048 C.P.S. The bone conduction (BC) time should be approximately normal. The air conduction (AC) time will be reduced. That is, BC is greater than AC.

4. The ears are tested separately, and the ear not being treated must be masked with sound, otherwise, the sound energy may be conducted to the fellow ear by way of the skull and create a fallacious ghost, audiogram.

5. Word testing with Spondee and Phonetically Balanced words (PB) should be done in all instances. If an increase in the intensity of sound produces better hearing and understanding (discrimination) the cochlear nerve function may be assumed to be in a functionally acceptable physiological state. The utilization of Spondee words, that is, two syllable words with equal emphasis on either syllable such as: blackboard, boxcar, hotdog, etc., are perhaps the least difficult words in the English language to understand. The PB words, Phonetically Balanced monosyllabic words, are the most difficult words in the English language to understand. Examples of these are: mush, mine, nag, nice, nip, etc. The use of word testing, in the diagnosis of deafness, has been outlined in a previous communication, and, suffice to state; if an increase in intensity produces a score over 85 per cent it may be assumed that the cochlear nerve function is adequate.

The mechanical obstruction causing the deafness may be overcome by increasing the intensity of sound delivered to the ear with a hearing aid or the obstruction may, in many instances, be bypassed or circumvented surgically. Most cases of conductive deafness can be restored to a socially adequate level of hearing.

The Differential Diagnosis of Otosclerosis

1. Chronic adhesive otitis media

This is the end result of a previous suppurative process and is usually associated with thickening and scarring of the ear drum. The history, in addition, suggests that the hearing impairment dates from a suppurative condition of the middle ear. The possibility of the two conditions being coexistent should not be overlooked.

2. Perforation of the ear drum

This may be the result of trauma or infection and should not be confused with otosclerosis.

3. Occlusion of the external auditory meatus

This may be congenital; or, acquired as the result of infection, foreign body, or tumour, and should not present any difficulties in the diagnosis.

4. Secretory otitis media

This condition may present some difficulties in the diagnosis. As a result of eustachian tube obstruction fluid may accumulate in the middle ear. A fluid level may be observed through the ear drum. On the other hand, a completely full middle ear will necessitate tubal inflation or paracentesis to establish the diagnosis. As soon as the fluid is evacuated the threshold of hearing will immediately improve and the diagnostic problem will be solved.

5. Congenital malformations of the ossicular chain

These conditions are more common than previously assumed and are easily confused with otosclerosis. The anomalies may consist of congenital absence of the stapes, or congenital fixation of the stapes, or an interruption of the ossicular chain, usually between the incus and the stapes. There may be an actual ankylosis or fusion of the ossicles; either to one another or to the resounding tissue. The history of the early onset of the deafness should differentiate these conditions from classical otosclerosis. Some of these conditions are amenable to surgical intervention.

6. Tympanosclerosis

This condition was described first, by Zollner in 1956. There is a hyaline-like degeneration of the mucous lining of the middle ear and covering of the ossicles. It has a cartilagenous consistency and may be peeled from the ossicles and middle ear with restoration of hearing.

The History of Surgery for Otosclerosis

A dramatic struggle between the morbidity of the otosclerotic foci and the audiosurgeon has occurred during the last 75 years.

Kessel, a German otologist, is credited with removal of the stapes in 1876. He allowed the oval window to be replaced with scar tissue. There were some immediate results which lasted a few days but the overall results were most discouraging.

Boucheron, in 1888, reported 60 cases of stapes mobilization. He removed the posterior half of the ear drum and mobilized the stapes with gentle traction and pressure. There were a few favourable results.

In 1890, Miot analyzed the results of 200 cases of stapes mobilization. With the exception of the incision and exposure, Miot's description of palpation, traction and pressure on the neck and head of the stapes is not unlike that described by Rosen in 1952. It should be mentioned that the surgery was performed under local anaesthesia, without magnification and with gas light illumination and reflection. Miot reported 45 per cent immediately successful stapes mobilizations with restoration of hearing.

Blake in 1892, in America, noted that it was almost impossible to remove the stapes in far advanced otosclerosis. In many instances the crura fractured and the footplate remained immobile.

Jack, in 1894, also in America, removed the stapes in 48 cases and reported that removal of the stapes did not give as good results in otosclerotic fixation as in those instances where the stapes

was removed as a result of post-inflammatory fixation. He concluded that the operation was not advisable for otosclerosis.

The universally poor results of stapedectomy (Miot excepted) caused Politzer in 1893 to express the opinion that extraction of the stapes could not prevent the progressive, bony proliferation in the oval window and the ultimate occlusion of this opening.

Despite some well authenticated instances of improvement in hearing following stapes mobilization (Miot in particular) Siebenmann stated in 1900, "Clinical experience teaches that all endeavours at mobilization of the stapes in otosclerosis are not only useless but often harmful."

It seems altogether likely that in those days before modern antibiotics and preceding present methods of microscopic illumination some labyrinths must have been destroyed by trauma, or infection, and perhaps a few cases of meningitis ensued. At any rate, the operation of stapes mobilization and stapedectomy were rather abruptly abandoned. Stapes surgery was not to be revived for 50 years. In 1952, Rosen rediscovered the possibilities of surgically attacking the otosclerotic focus at its primary site, namely the footplate of the stapes.

In the meanwhile, that is from 1900 to 1938, otologists were attempting to divert sound energy into the inner ear by pathways other than by way of the ossicular chain and the footplate of the stapes. In 1911, Barany decompressed the vestibular portion of the labyrinth and fenestrated the posterior semi-circular canal. The hearing improvement was immediate but unfortunately transient and the idea was abandoned .

Jenkins, in 1913, fenestrated the lateral semicircular canal in a few cases. The fenestra was covered with a skin graft. Once again an immediate hearing gain was obtained but the results were transient.

In 1917, Holmgren, the father of surgery for otosclerosis, decompressed the superior semi-circular canal in such a manner as to allow the drum and attached skin to be placed over the fenestra. He later fenestrated the lateral semi-circular canal and still later trephined the promontory and fashioned a muco-periosteal flap to the new opening. Holmgren was also the first otologist to utilize a dissecting microscope in ear surgery. The pioneer work of Holmgren contributed in no small measure to the success of present day audiosurgery.

Sourdille of France, worked conscientiously with the problem of labyrinthine decompression from 1924 until 1937. "Basically, his technique consisted in the creation of a new sound transmitting apparatus to carry vibrations to the internal ear mechanism through a permanent fistula in the labyrinth." Both Holmgren and Sourdille had conceived the idea of removing the incus and Holmgren had in fact removed both incus and malleus before creating the fenestration.

Sourdille performed the surgery in multiple stages; firstly, in an attempt to circumvent infection, secondly, he was of the opinion that the osteogenic activity of the bone could be depleted by repeated fenestrations. The difficult technique together with the multiplicity of operations did not engender enthusiasm among otologists. However, in 1937, Sourdille reported 140 cases in which a marked improvement in hearing was obtained in 80 per cent. A noteworthy contributor to audiosurgery was Sourdille of France.

Lempert's monumental one-stage fenestration technique of the lateral semi-circular canal for the restoration of hearing from clinical otosclerosis was described in 1938 and modified to present day acceptance ten years later. Lempert's work will stand as a monument to man's courage and resourcefulness. The operation has given and will continue to give, the otosclerotic deafened individual a very reasonable chance of obtaining lasting hearing at a socially adequate level.

The success of the Lempert fenestration procedure has been the direct result of his genius. However, the ancillary aids of better illumination, improved visualization with the operating microscope, the protection afforded by the anti-bacterial medications and above all, the rapid advances in audiometry measuring and reporting accurately the hearing results, have all played an important part in the acceptance of this surgical procedure by the public as well as the medical profession.

The Lempert fenestration procedure stood as a brilliant beacon from 1937 until 1952; signifying, as it did, the most ingenious and most meticulous surgical manoeuvre yet devised for the relief of a disease process. It was the answer to some deafened individual's prayer; the answer to young men's vision and the pioneer's dream.

"There is no work of genius which has not been the delight of mankind, no word of genius to which the human heart and soul have not sooner or later responded." Honour upon honour was conferred upon Lempert who responded with increased work and investigation into the problems of hearing and deafness and in addition, took on an assiduous teaching program available to all who had the ambition and ability to master his techniques.

The history of science is science itself and experience is but an arch to build upon. A simple question by a patient in 1952 was to further broaden and extend the arch of audiosurgery.

An otosclerotic patient asked Dr. Rosen if it were possible to determine, absolutely, whether or not the stapes was fixed before proceeding with classic fenestration surgery. Rosen stated that he could, after lifting the ear drum from the sulcus, probe the stapes and determine the presence or absence of fixation. This was done and to Rosen's amazement the stapes was mobilized and the patient's

hearing restored. Rosen's original technique was simple and depended entirely upon the sense of touch to determine when mobilization had been completed.

Since that time, 1952, a great many techniques have been devised for mobilization or removal of the stapes and indeed the substitution of the stapes itself with tantalum wire or polyethylene tubing. This has been done in hundreds of cases. History has repeated itself. Miot reported 200 cases of stapes mobilization in 1890. Rosen's technique of 1952 is very similar to that reported by Miot. Kessel removed the stapes in otosclerosis in 1876. American otologists revived stapedectomy and prosthetic substitution in 1958. The history of science is, indeed, science itself.

References

Alexander, Walter: Loudness, Recruitment and Vertigo Laryngoscope, Vol. LX, 19: 174-188, 1959.
Alexander, Walter: Some Aspects of Auditory Rehabilitation. Man. Med. Rev., Vol. 6, Jan., 1960.
Bois, L. R.: Fundamentals of Otolaryngology. W. B. Saunders, Philadelphia, 1959.
Coates, Schench, Miller: Otolaryngology, Vol. 2. W. F. Prior Co., Hagerstown, Mo., 1955.
Goodhill, Victor, Holcomb, Arthur: The Surgical Audiometric Nomograph in Stapedolysis (Stapes Mobilization). Arch. Otol., p. 399, Vol. 63, 1956.
House, H. P.: Symposium Stapes Mobilization two years Later. Laryngoscope, p. 1403, Vol. 63, 1958.
Symposium The Operation for the Mobilization of Stapes in Otosclerotic Deafness. Laryngoscope, p. 729, Vol. 66, 1956.
Jackson and Jackson: Diseases of Nose and Ear. W. B. Saunders Co., Philadelphia, 1959.
Rosen, Samuel: Palpation of Stapes for Fixation. A.M.A. Arch. Otol., Vol. 56, 1952.
Rosen, Samuel, Bergmen, Moe: Improved Hearing After Mobilization of Stapes. Jour. of Laryn. and Otol., Vol. LXIX, 1955.
Rosen, Samuel: Fenestra Ovalis for Otosclerotic Deafness. Arch. Otol., p. 227, Vol. 64, 1956.
The Development Stapes Surgery After Five Years. A.M.A. Arch. Otol., p. 129, Vol. 67, 1958.
Scheer, Austin: Further Development of Mobilization Operation. A.M.A. Arch. Otol., Vol. 67, 1958.
Shambaugh, George: Surgery of the Ear. W. B. Saunders Co., Philadelphia, 1959.
Wolff, Dorothy, Eggston, Andrew: Histopathology of Ear, Nose and Throat. Williams & Williams, Bellemore, 1947.

Biochemistry

Progress in Clinical Biochemistry

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There has been further progress, but no outstanding advances in Clinical Biochemistry since the previous review of the subject in this Journal[1]. However, proper application and judicious use of techniques and procedures has yet to catch up with the advances of previous years.

Automation

Automation of a number of common laboratory procedures has become wide-spread during the past 12-18 months particularly in institutions where the work load is large. These instruments have proven to be surprisingly trouble-free and capable of handling large numbers of a given procedure in a relatively short time and compared with technician salaries, their cost is not great. To date glucose, urea, chloride, protein, phosphate, phosphatase are the procedures that can be handled with ease, speed and accuracy. Unfortunately, unlike a well trained technician, the machine can only do one thing at a time and there is thus a limitation to the numbers of procedures that can be automated in a working day, and there soon develops a wistful desire to acquire an additional instrument. Despite advertising suggestions by the manufacturers, they are not practical for single or emergency determinations, taking under these circumstances more time than the manual methods.

Serum Enzymes

The various serum enzymes continue to engage attention, and new ones are constantly being introduced in a search for the ideal of organ or disease specificity as regards an enzyme in the serum. Along with the introduction of new enzyme procedures, the claims and usefulness of which have yet to be established, one can detect a tendency for the requisitioning of "serum enzymes," joining those other monsters the "liver profile," "serum electrolytes" and "complete blood count."

It has recently been reported that serum acid phosphatase activity is elevated in Gaucher's Disease[28]. This acid phosphatase activity appears to be a different entity from both the red cell acid phosphatase and prostatic acid phosphatase.

Whether lactic dehydrogenase or glutamic oxaloacetic transaminase is the preferred enzyme to be used in the assessment and management of cardiac infarction is still undecided; both have their proponents[2, 3]. It would seem that either one is useful under these circumstances, and there is little reason to order both, but rather use one or the other. Glutamic pyruvate transaminase (SGP-T) is less valuable in the diagnosis of cardiac infarction than SGO-T and provides little, if any, advantage over SGO-T as regards parenchymatous liver disease[4]. It might be suggested that this enzyme be dropped from the diagnostic armamentarium.

A recent paper[25] suggests that simultaneous total serum iron and glutamic oxaloacetic transaminase determinations can be of considerable diagnostic value in differentiating extra-hepatic obstructive jaundice from viral hepatitis; marked elevations of both iron and transaminase being found in viral hepatitis. Large elevations of serum iron and transaminase are rarely if ever found in extra-hepatic obstructive jaundice.

A recent introduction is leucine amino peptidase which has been claimed as a specific for carcinoma of the pancreas[5]. It is by no means specific for this condition[6], although normal values may rule out carcinoma of the pancreas as a possible diagnosis. Serum aldolase which a short time ago was claimed to be of value in the diagnosis of muscular

dystrophy[7] has latterly been shown by a careful assessment to be of limited value, not even being constantly elevated in children with progressive muscular dystrophy[8]. Serum ribonuclease (RNA) has been shown to be elevated in a number of diseased conditions, but particularly in cirrhosis of the liver where, if determined at intervals, it appears to be a good indicator of the rate of advancement of the disease[3]. Also in the connection with liver disease a new and simple empirical flocculation test appears to be of value in the differentiation of obstructive and non-obstructive jaundice[9]. This report of course requires more confirmation.

Electrophoresis

Refinement and elaboration of electrophoretic techniques continues. Unfortunately, the significance of variation in the five protein fractions determined by the now standard paper electrophoresis techniques has by no means been completely worked out, and the application of the newer techniques of starch block or starch gel electrophoresis or modification of the buffer systems with resultant further subdivision of the serum protein fractions are not warranted at this time on a routine basis. They can however, provide additional information in certain cases such as the study of abnormal proteins in myeloma and like conditions and the haptoglobins in intra-vascular hemolysis, changes in ceruloplasmin in Wilson's Disease, etc.

Paper electrophoresis of serum mucoproteins has shown that there are marked disturbances of these in leukemia and lymphomata and their serial estimation may be of value in following these diseases[9].

The electrophoresis of serum proteins is taking a new direction which potentially has great promise, namely its application to serum enzymes. The extension of this technique may enlarge the usefulness of serum enzymes. Lactic dehydrogenase has been the enzyme most studied to date. It has been shown that the total enzyme activity of the serum is distributed between the various globulin fractions[10]. Increases in serum L.A.D. in cardiac infarction are associated with elevations in the L.A.D. associated with the alpha 2 globulin; increases in L.A.D. liver disease are associated with elevated L.A.D. in other protein fraction of beta or gamma globulins. In other disease conditions L.A.D. is characteristically distributed on electrophoresis of the serum proteins[11].

A separation of the serum alkaline phosphatase electrophoretically using the starch block technique with liver function or liver disease migrates with the alpha globulin, whereas the less mobile enzymes are associated with osseus tissue.

In its present form, this technique does not lend itself to routine use, but it is of considerable interest and value in the investigation of the individual patient. Application of the technique to other enzymes in serum may be expected in future.

Another useful application of electrophoresis is in the detection of intravascular hemolysis by observing alteration in the hemoglobin carrying proteins of the serum[13, 14]. It should be pointed out that the much simpler and quicker tests for total serum hemochromogens should first be done in suspected cases of hemolysis as a preliminary screening procedure. If the serum hemochromogens are normal that is below 10 mg. %, there is little point in proceeding with the more complex and time consuming electrophoresis of the serum for haptoglobins.

Blood Lipids

In association with the continued and increasing interest in atherosclerosis there is increase in requisitions for serum cholesterol determinations. It is not our intention to discuss here whether serum cholesterol determinations are really of much value in the management of atherosclerosis, but it may be pointed out that the precision of cholesterol determinations is notoriously poor, and it should be noted that the results obtained with the procedure used in one laboratory, although it may be reasonably reproducible in that laboratory, may well be different from the results obtained in other laboratories according to which cholesterol method is used. In other words, the value obtained for serum cholesterol by the various methods using the same serum or sample can differ widely. This unfortunately means that the physician must carry in his head an idea of the normal range of cholesterol in accordance with the number of laboratories that his patient's serum may be analyzed at.

Also in the blood lipid field, the serum lipoproteins in health and disease have been exhaustively reviewed by Sternberg[15]. However, his views on the clinical usefulness of lipoprotein determinations can only be considered to be widely optimistic.

Investigations of the non-esterified fatty acids of the plasma have shown that the determinations of this metabolically very active fraction of the blood lipids may be of value in the study of diabetes[16] and panhypopituitarism[17].

Miscellaneous

Many biochemical determinations now in general use, but usually only performed in the larger hospital laboratories, require a considerable amount of skilled technician time, a commodity always in short supply. This is not always realized by doctors ordering these tests, who requisition them with the expectation they can be done with the same ease and speed as a routine urinalysis or blood sugar. Among such tests are catechol amines, porphyrins and steroid determinations. Particularly notable and in fashion at the moment is the determination of urinary catechol amine excretion. There is a strong tendency to order this as a "screening test" or a "ruling out test" for pheochromocytoma. It would be more sensible and productive of a great saving in time and money if this determination was at least restricted to patients on whom a positive regitine test had first been obtained.

In the assessment of adrenal cortical function, steroid excretion studies, as is well known, can be of considerable value. Usually in such cases both 17-Ketosteroids and 17-Hydroxysteroids or corticosteroids are ordered. It is not always realized that except in cases of virilization, 17-Hydroxysteroids alone, are a more specific and reliable index of adrenal function than the 17-Ketosteroids. In cases of virilization determinations of urinary pregnanetriol[22] can be of considerable value, elevated values being indicative of adrenal tumour.

It was pointed out in the last review of this field[1] that despite its inaccuracies in all varieties of acidosis and alkalosis the CO2 combining power continues to be ordered in preference to the CO2 content. This anachronism still continues despite the fact that technically the CO2 content is no more difficult to do than is the CO2 combining power.

It can also be emphasized that depending on CO2 content alone as an index of acidosis or alkalosis can be very misleading if the metabolic derangement is respiratory in origin. There are now available speedy, accurate and simple instruments for measuring the blood pH[20].

A simple screening test for Aminoaciduria has been described[24] which should prove most useful in determining which urine should be subjected to the relatively cumbersome and time consuming two dimensional chromotography necessary for precise identification of abnormal amino acid in urine.

In the field of thyroid disease a new assessment of thyroid function is being increasingly used which as a procedure, is simple to perform. This is the red cell uptake of radioactive triiodothyronine[21]. In hyperthyroidism the ability of the patient's red cells to utilize or take up radioactive triodothyronine is elevated, whereas in hypothyroidism it is depressed. Although a number of other conditions will also give both increased uptakes, notably liver disease, malignancy and anticoagulant therapy, and decreased uptakes, notably in pregnancy, the test has the great advantage that being an in vitro measurement, it does not require the presence of the patient or administration of radioactive material to the patient. It can however, only be done in places possessing suitable detecting equipment for radioactivity.

In the differentiation of causes of hypercalcemia it has been reported that cortisone in doses of 150 mg. daily for 10 days will lower the elevated calcium associated with sarcoidosis, malignancies, vitamin D intoxication, etc. but not the hypercalcemia of hyperparathyroidism[18]. The mechanism of this action is not clear but at times this procedure may be of value diagnostically.

An ultra-micro analytical system has come on the market recently[23]. Essentially this system consists of modifications of the photoelectric colorimeter, centrifuge, burettes and pipettes so as to handle with accuracy quantities of blood or serum of the order of 50 micro litres or less by standard techniques. Although ultra-micro analysis of this type are desirable especially in dealing with infants, the analytical system is expensive and its usefulness has not yet been thoroughly assessed and in many cases suitable micro methods are available using the more common standard laboratory instruments.

A potentially useful test for cystic fibrosis of the pancreas is electrophoresis of duodenal fluid[27]. In cases of cystic fibrosis of the pancreas duodenal fluid contains proteins which electrophoretically resemble serum proteins. Conspicuously present is a protein migrating like albumin. It is suggested that all duodenal fluid originally contains serum proteins but normally these are rapidly hydrolysed by pancreatic enzymes—which enzymes are lacking in cystic fibrosis.

A survey has been made which reveals that with the exceptions of glucose, phosphate and sodium, values for various constituents of the blood are little if at all affected by a standard meal. However, the custom of taking and analyzing blood under fasting conditions is so well established that it could be difficult to change it even if there were compelling reasons to do so.

In the past year there have been published some excellent new books dealing with clinical chemistry. Especially noteworthy is Advances in Clinical Chemistry by Sobotka and Stewart[19]. These volumes deal with the clinical applications as well as with methodology; among the subjects dealt with lucidly and completely are transaminases, electrophoresis, renal function, plasma iron, bile pigments and amino-aciduria as well as many others.

References

1. Blanchaer, M. C.: Man. Med. Rev. 39: 339, 1959.
2. Snodgrass, P., Warren, E. C., Eppinger, E. C. and Vallee, B. L.: N. Eng. Jour. Med. 261: 1259, 1959.
3. Freeman, I. et al.: Am. J. Med. Sc. 237: 768, 1959.
4. Van Raymenant, M. and Tagnon, H. J.: N. Eng. Jour. Med. 261: 1325, 1959.
5. Rutenberg, A., Goldberg, J. A. and Pineda, E. P.: N Eng. J. Med. 259: 469, 1959.
6. Perry, W. F. and Gibson, C.: Man. Med. Rev. 40: 25, 1960.
7. Arronson, S. and Volk, B. W.: Proc. Soc. Ex. Biol. Med. 94: 360, 1957.
8. Rowland, L. P. and Ross, G.: A.M.A. Arch. Neurol. and Psychiat. 80: 157, 1958.
9. Daikos, G. K., Mattheson, P. and Athanasidon, M.: Lancet 2: 488, 1959.
10. Moschides, E. et al.: J. Clin. Invest. 37: 127, 1958.
11. Vesell, E. S. and Beam, A. G.: Proc. Soc. Exp. Biol. Med. 94: 96, 1957.
12. Blanchaer, M. C.: Unpublished Data.
13. Neil, F. C. and Northam, B. E.: J. Clin. Path. 11: 206, 1958.
14. Blanchaer, M. C.: Man. Med. Rev. 39: 437, 1959.
15. Sternberg, J.: Can. Med. Assoc. Jour. 9: 749, 1959.
16. Butterfield, W. J. and Schless, G.: Diabetes. 8: 450, 1959.
17. Perry, W. F. and Gemmell, J. P.: Metabolism. 9: 501, 1960.
18. Burr, J., Farrell, J. J. and Hills, A. G.: N. Eng. J. Med. 261: 1271, 1959.
19. Sobotka, H. and Stewart, C. P.: Advances in Clinical Chemistry—Academic Press, New York, 1959.
20. Astrup, P., Jorgensen, K. Andersen, O. and Engel, K. Lancet. 1: 1035, 1960.
21. Homolsky, M. W., Golodetz, A. and Freeberg, A. S.: J Clin. Endocrinol. 19: 103, 1959.
22. Fotherby, K. and Love, D. N.: J. Endocrinol. 20: 157, 1960.
23. Sanz, M. C.: Chimica. 13: 192, 1959.
24. Ghadini, H. and Shwachmar, H.: N. E. J. Med. 261, 998, 1959.
25. Goldstein, F, Seligson and Bockus, H.: Gastroentrology. 36: 487, 1959.
26. Keiding, N.: Scand. J. Clin. Lab. Invest. 11: 106, 1959.
27. Ely, S. and Kelly, V. C.: Proc. Soc. Exper. Biol. and Med. 99: 775, 1958.
28. Tuckman, L. R. and Goldstein, G.: Am. J. Med. 27: 959, 1959.
29. Annino, J. S. and Relman, A. S.: Am. J. Clin. Path. 31: 156, 1959.

Orthopedics

Dwarfism

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A dwarf is a person whose physical dimensions are markedly less than those characteristic of his age, group, and race. The usual dwarf, aside from the primordial one, Cornish elves, leprechauns, and gnomes is of either the hypo-pituitary or achondroplastic type. Legends concerning a race of people of abnormally small stature have been common in all parts of the world from an early period of history. Homer referred to pygmies who were believed to be found in Thrace, and Herodotus, in his original "Baedeker" wrote of a people of extremely small stature who dwelt in the Lybian deserts. The Bible, which is much taken with giants, mentions a dwarf only once—in Leviticus 21-20, where it is commanded that "No dwarf shall make the offering at the altar." This was indeed true for all mutilated persons. The custom of having dwarfs and deformed men in the suites of grand personages was common from time immemorial. Dwarfs were popular with wealthy Romans who kept them for diversion. Most of the dwarfs came from Egypt and Syria.

Pygmies are found especially in Central Africa and the Amazon forest. Primordial dwarfs or pygmies are completely normal people. This is merely a familial phenomenon and purely hereditary. These people are all of good intelligence born abnormally small. Growth continues in a slow manner. They mature sexually at the proper time, and their epiphyses unite at the proper time. Chemical studies are entirely normal. They are capable of normal reproduction, usually transmitting the dwarfism to their children. In-breeding will perpetuate the condition, and conversely, it may be bred out as well.

Hypopituitary Dwarfism is the result of destruction of the anterior lobe of the hypophysis, the principal cause being a tumor, usually a craniopharyngioma or a chromophobe adenoma. These tumors secrete no hormones, but destroy tissues that normally secrete them.

In 1871 Lorain and De Lacoeur described a group of tuberculous persons who in reality, although small in stature, represented a form of infantilism and not true dwarfism. This was probably due to malnutrition and chronic tuberculosis. Although it was not until 1908 that Levi described true primary hypopituitary dwarfism with hypogonadism, the term Lorain-Levi is given to this type of dwarf. Simmons in 1914 described hypophyseal cachexia. He referred primarily to post partum haemorrhage with destruction of the pituitary, but it was noted that when this hypophyseal destruction occurred in childhood, dwarfism resulted. Most Froehlich's syndrome cases do not present a full hypopituitarism, but only a deficiency of gonadatropin. Thus they may be normal or oversized. Decreased pituitary secretion resulting in dwarfism also occurs as a result of non-specific atrophy of the gland as well as destruction by tuberculosis or syphilis.

Hypophyseal dwarfism is symmetrical and well proportioned. There is a proportionate diminution in the size of the trunk and the extremities. The hands and the feet are small and delicate. The head is extremely small and the features are childish. With increasing age the facial skin tends to become atrophic and wrinkled. The intellect of the hypophyseal dwarf is good, but there is a great emotional instability. This may be due to hypogenitalism and sexual indifference. The patient may manifest symptoms of an intracranial neoplasm such as headaches, impairment of vision, or encroachment of the visual field.

It is interesting that well proportioned midgets are usually hypophyseal dwarfs. Their effort to emulate normal adult society results in midget intermarriages and the so-called Lilliputian villages so common at world fairs. Since they are usually hypopituitary these individuals rarely have offspring.

The laboratory data in pituitary dwarfism are indicative of impairment of many endocrine functions. The basal metabolic rate is commonly low. It varies from minus 15% to minus 35%. The fasting blood sugar may be reduced, the serum sodium is sometimes low. There is usually either total absence or a definite reduction of urinary excretion of neutral 17 ketosteroids and the pituitary gonadotropins.

Roentgenograms of the skull of the hypophyseal dwarf shows the face to be small and the cranium largely infantile. The brow retains the verticality of infancy. The diploae are hypoplastic, the frontal sinuses poorly developed, the sella turcica infantile. The alveolar processes are hypoplastic and crowding of teeth is pronounced. There is a delay in the appearance of the epiphyseal centers. Closure of the epiphyses in all the bones is delayed. The ephyseal centres may never unite to the shafts.

Primary hypopituitarism must be differentiated from several other conditions:

1. Secondary hypopituitarism, which results from anything producing atrophic changes in the anterior hypophysis, such as malnutrition, cardiac disease, renal disease.
2. Cretinism or hypothyroidism.
3. Idiopathic pituitary disturbance represented by progeria.

4. Ovarian agensis or hypofunction (Turner's Syndrome).
5. Primordial dwarfism or pygmyism.
6. Achondroplasia.
7. Osteogenesis imperfecta.

To date no specific treatment of this condition is available. It is true that growth principles of the anterior pituitary would be effective, if available and used prior to epiphyseal closure. Such a growth hormone is available for use in animals, but an effective type for humans has not been attained. The use of individual hormones such as Esterogens, Testosterone, etc. might be desirable. Surgical excision of the tumor is sometimes necessary to reduce the ocular manifestations. The prognosis is good, unless the tumor involved is malignant. The patients live out a normal span of life.

Achondroplasia is a developmental error resulting in disturbed enchondral ossification. This produces dwarfism of the short limb type associated with a relatively normal skull and unimpaired intelligence. Achondroplasia is the most common type of dwarfism. It has been known since antiquity, and, in fact, two Gods of ancient Egypt in presently existing statues are achondroplastic. Such dwarfs were the usual court jesters of the middle ages. Fitness for such a role can be understood in view of their normal intelligence, unusual appearance, great physical strength, and acrobatic ability; the latter due to their large muscle mass in proportion to short stature. Dachshunds are not achondroplastic.

An explanation for the fact that achondroplasia is not more common lies in the fact that approximately 80% of all cases are stillborn or die within the first year of life. Those who survive may live to advanced ages. The incidence is slightly greater in the female than the male. An achondroplastic parent may have of up to 50% of the offspring so affected. Achondroplasia has been traced through as many as six generations in the male line, but it is also sporadic. The condition does not affect fertility; however, the deformity of an achondroplastic pelvis interferes with normal development and delivery of a child.

The etiology of this condition is unknown. It appears to be a developmental defect with some hereditary characteristics which are not always constant. It definitely is initiated in utero. The abnormal changes may be observed by X-ray at the end of the second month of intrauterine life. It has been described in twins, one or both of whom may be affected. If only one is affected the condition could not be due to maternal endocrine error.

When achondroplastic individuals are young they tend to be more attractive than when older because they become more grotesque as the disproportionate size of the head becomes apparent. Physical signs and symptoms are usually obvious at birth. The adult reaches approximately four feet in height. When erect the finger tips, which in normal individuals reach about the mid thigh, come only to the level of the greater trochanter. Furthermore the upper extremities stick out like stubby wings. The shape of the head is round or brachycephalic. The buttocks are prominent. There is an increase in lumbar lordosis. The genital organs are normal. The chest is small and flattened because the ribs are short. The abdomen is protruberant, the hand is a trident, and the middle finger is the same length as the index and the ring finger. The upper arm is short in proportion to the forearm. Both upper and lower extremities are considerably shorter and thicker than normal. Limitation of joint movement is common. Elbow extension is usually limited. There is sometimes hyperextension of the knee. Bowing of the lower extremities suggests that coxa vara may be present, but this is not so.

The site of the pathological disturbance of the long bones, the base of the skull, and the ribs occurs at the zone of provisional calcification at the epiphyseal plates. This may vary from simple retardation to practically complete aplasia. The cartilage columns do not proliferate and line up in an orderly fashion. Calcification occurs in a spotty way in these irregular cartilageous masses which are then not properly absorbed and replaced by bone. The principal defect is, thus, the lack of normal chondrocyte growth and development.

Periosteal ossification is normal or excessive. The periosteal ferrule outstrips and overlaps the cartilage-formed bone. This explains the radiographic appearance that the cortex of the metaphysis embraces the adjacent part of the epiphysis. A feature not invariably present is in growth from the periosteum of a vscular fibrous band between the zone of ossifying cartilage and the rest of the epiphysis. If this fibrous layer extends across the whole diameter of the bone, growth ceases.

At the base of the skull premature fusion of the sphenoid and the occipital bones forms a shortened skull base and the foramen magnum is reduced in diameter. It is a rather interesting problem that in the skull premature fusion occurs, and yet it is not uncommon to find epiphyseal plates that persist indefinitely in the limb bones. This is incompletely explained.

By X-ray the bones of the extremities are broadened at the ends, short and relatively normal in diameter at the centre. Shortening is often proportionately greater proximally than distally which is contrary to that found in pituitary dwarfism. Usually the ulna is shorter than the radius producing a bowing of the upper extremities. The epiphyseal centers appear enlarged but are actually not abnormal in size. It is the flared metaphyseal end that makes them appear large. This is particularly evident in the lower femur and the upper tibia where the metaphysis may be almost V shaped and appear to practically enclose the epiphyseal center. The ribs are shortened to less than half of

their usual length. The scapulae are deformed and the glenoid does not appear to be large enough for the humeral head. This accounts for some of the fixed abduction contracture. The pelvis is small. The sacrum tends to protrude considerably because of excess lumbar lordosis.

Differential diagnosis is quite simple. Differentiation from pituitary dwarfism is usually easy on the basis of sexual development alone and from primordial dwarfs is similarly easy since these latter are normal people. In Morquio-Brailsford's disease and Hurler's syndrome X-ray of the vertebrae show a slipper tongue deformity with kyphosis. In Hurler's disease there is mental deficiency, liver enlargement and corneal opacity. Lastly, these types are usually born normal, whereas the achondroplastic is born with his deformities.

There is no therapy. Those who survive the first month of life will have a normal life expectancy. They can reproduce but Caesarean section is usually necessary.

Osteogenesis Imperfecta is a term presently accepted for a rare disease starting early, or even in embryonic life, characterized by deficient matrix formation and abnormal fragility of bones. In some cases it is a familial disease. Clinically all cases may be considered as a part of one syndrome:

1. Brittle bones
2. Relaxed ligaments
3. Blue sclerae
4. Otosclerosis
5. Osteoporosis and dwarfism due to deformity after fractures.

Spontaneous regression is often observed with puberty. This could be due to the fact that estrogens and other hormones are essential for bone formation, or that once growth has been completed there is sufficient bone for function when rapid growth is not occurring. This disease has rarely been seen in twins, both identical and fraternal.

This disease affects both sexes equally. It is quite possible for other members of the family to have blue sclerae without clinical evidence of osteogenesis imperfecta which would lead one to believe that the disease may be a quantitative as well as qualitative mesenchymal defect. For convenience division may be made into fetal, infantile and tarda forms. This distinct differentiation, however, has not been supported by recent investigators.

In the fetal variety the changes may occur during development in utero and are usually associated with stillbirth. The infantile form is less severe and the cases may survive to adult life although this is rare The tarda type is even more benign and the child may appear normal at birth but frequent fractures with relatively slight trauma may occur through childhood and more or less stop with puberty.

Signs and symptoms are confined entirely to the bones, which are extremely fragile. All subsequent deformities are due to fractures which unite normally and painlessly, although frequently in severe malposition. Callus formation is normal and at times may be excessive. There are mnay reported cases of hyperplastic callus formation of a severe degree in osteogenesis imperfecta. Except in the very mildest forms the patients are dwarfed and deformed. This is due to both mal-union of fractures and probably to retardation of growth from disuse. The skull is usually deformed with marked bossing and wormian bones. Intellectual development is perfectly normal. The deciduous teeth usually appear rather translucent due to poor calcification. Muscular development is laggard.

Chemically the ash content of the bone is as low as 24% compared to the normal of 60%. Repeated blood analyses and studies have failed to show any abnormalities. Inadequate retention of Ca and P for the age and weight of the child has been noted, but this is only due to the fact there is less skeleton to calcify. Ca and P balance studies have always proved to be normal.

Grossly these bones are brittle. They often are quite soft. On cut section the shaft appears to be slender and the cortex extremely thin. The periosteum is irregular and sometimes appears incomplete. The epiphyseal and metaphyseal relationships are normal, unless impaired by deformities. Microscopically a defect in enchondral bone formation is noted. This appears to be in the osteoblast cycle. The absorption of calcified cartilage and conversion into bone occurs not in a uniform and normal manner, but in a spotty haphazard fashion. So as an end picture we see a defect of metaphyseal and therefore eventually of diaphyseal trabeculae. In addition there is a deficiency of osteoblasts in the periosteum.

There is no specific treatment. Whenever fracture occurs it may be expected to heal well and early, provided the usual measures are taken. Good diets are of course necessary. An effort to keep the child active to stimulate bone formation is often helpful. This in turn improves muscle tone. The current therapy at Winnipeg Shriners' Hospital is bone fragmentation and rodding followed by weight bearing braces in an effort to stimulate whatever potential is present The results so far seem fairly good, but only on a testimonial basis.

Rickets, in its more advanced form, is a cause of dwarfism. This was certainly more true in the past than it is now. The term rickets, apparently, originated in the word ruchet in the Dorset dialect. However, there is some contention that it originated from an old English word wrick, meaning to twist, and some feel that it came from an old Anglo-Saxon word Reig, signifying a protuberance. Whatever the deriviation, it is apparent that the word originated from England. It is quite clear from the very nature of this disease and its etiology that it is much more likely to be found on that "Sceptered Isle" in the North Sea than in more favorable

climates of the Mediterranean littoral. Glisson, who gave us the first detailed description, felt that the disease was endemic to Dorset and Somerset, thence spread to London, Oxford, Cambridge and all the Southern and Western parts of the Kingdom. Glisson's description of the deformities and changes is most clear. Unfortunately, he ascribed etiology to a "cold distemper." This was somewhat wide of the mark.

Rickets is a metabolic disease caused by a deficiency, characterized clinically by a softening and bending of the bones and stunted growth. Normal growth of long bones is replaced by a disordered growth in which there is disruption of boundaries between the usually orderly zones. In place of lamellated bone there occurs an unlamellated tissue, so called osteoid, that is uncalcified. Modelling of bone does not occur because of the difficulty of reabsorption of uncalcified matrix. Pathologically there is continued proliferation of the epiphyseal cartilage which grows in columns many times the normal length. As the disease continues the columns continue to grow and disorganization occurs. The pathology is due to failure of the cartilage to calcify in the provisional zone. In chronic long standing rickets the entire bone becomes involved in the porotic demineralization process. There is a tendency for bowing of the bone through weight bearing and through muscle pull.

The classic form of rickets is secondary to Vitamin D deficiency. There is also a group of rachitic conditions associated with kidney dysfunction. In the Albright-Butler group there is a loss of calcium as additional fixed base in the urine when there is not enough ammonia available and the body is forced to use calcium to combat acidosis. Fanconi rickets is a result of a defect in kidney function which results in glycosuria, cystinuria and excessive phosphorous excretion. We have so called hepatic rickets associated with liver dysfunction, as well as rachitic changes associated with idiopathic steatorrhoea or other parts of the celiac syndrome. There is also Vitamin D resistant rickets, most probably due to a hereditary inability to utilize Vitamin D. It should be emphasized that the pathologic changes in all rachitic or osteomalacic processes are much alike no matter what the cause. The term rickets is a historical term that no longer describes a specific condition but rather a picture of X-ray and histologic changes in bone. Anything that interferes with or prevents the calcification of osteoid results in rickets.

Chondro-Osteo Dystrophy or Morquio-Brailsford's disease is dwarfism of the short trunk variety. This is a rare deformity and, although occasionally familial, it does not appear to be truly hereditary. Both sexes are affected. The etiology is unknown. This disease is usually noted before the age of ten, but not before the age of three or four. Characteristically there is:

1. Dorso lumbar kyphosis due to anterior wedging of the vertebral bodies.
2. Settling of cervical spine with shortening of the neck, again associated with wedging.
3. Scoliosis associated with kyphosis due to vertebral collapse in the dorsal region.
4. Multiple epiphyseal deformities of the long bones and joints resulting in such changes as genu valgum, coxa vara, pes planus, etc.
5. Dwarfing.

There is progressive flaccidity of the muscles and relaxation of the ligaments. The hands are deformed and the fingers broadened. The skull is normal but the facial features may be unattractive. This is not considered diagnostic. Intelligence is normal. The prognosis is poor.

Early X-ray outlines of the vertebrae show platyspondyly. The tongue-like prolongation of the middle portion of the anterior part of the vertebral body is supposed to be diagnostic. This results from the failure of the formation of the upper and lower epiphyseal plates of the vertebral bodies. The blood chemistry is normal.

This disease is differentiated from achondroplasia by the fact that these are not strong dwarfs; from gargoylism by the fact that the features are not grotesque, there is no mental deficiency, and the corneas are not clouded; from rickets, by the tongue formation of the vertebra and the epiphyseal, lack of typical cupping in the epiphyseal areas; from cretinism by the clinical appearance, blood cholesterol, and protein bound iodine; from Calves' disease of the spine by the fact that the superior and inferior epiphyseal plates are more affected than the primary ossification centres of the vertebrae; from tuberculosis spondylitis by lack of signs of constitutional disease.

Osteopetrosis is a rare disease beginning in infancy or in utero, of genetic and familial occurrence, characterized essentially by an increase in radiographic density of bone with varying changes of structural contour. Usually the long bones tend to be shortened and clubbed at the ends with complete obliteration of the marrow cavities. The term marble bones is a misnomer; the bones are chalk-like. These patients suffer from impingement upon the cranial foramina, fractures and dwarfing, osteomyelitis of the jaw due to defective dentition, and anemia due to obliteration of the marrow. Blood chemistry studies are normal. This disease must be differentiated from melorheostosis, which is probably a localized form of osteopetrosis, metal poisoning, hypervitaminoses D, osteogenis imperfecta, leukemia, Paget's disease, congenital syphilis, and Engelman's disease. The prognosis is poor.

Other diseases which are known to cause general dwarfism are: Progeria, a form of premature senility associated with hypopituitary dwarfism; Congenital Syphilis; Macrogenitosomia Precox, a condition in which there is acceleration of skeletal growth with sexual precocity due to a tumor of the ovary. In this last condition the precocious growth is terminated by premature fusion of the epiphysis

so the early tendency to gigantism ends in some degree of permanent dwarfism. The same situation can arise from the Adreno-Genito syndrome if hyperplasia or an adenoma of the adrenal cortex occurs early in life.

Dwarfism of a short limb is often found in Froelich-Syndrome, Cretinism, Dysplasia Epipysalis Punctata and Dysplasia Epiphialis Multiplex. The latter is a rare congenital developmental error characterized by mottling or irregularities in density and outline of several developing epiphyses, dwarfism, and stubby digits. Diaphyseal Aclasis or multiple exostosis can occasionally cause dwarfism.

This then has been a discussion of the most commonly seen little people, the homunculi of the world. The somewhat similar pathological findings suggest that each is in some way a mesenchymal failure, often predetermined, and often without possibility of correction with present knowledge.

References

1. Anderson, Carl E.; Crane, J. T.; Harper, H. A.: Alterations in Growth-Cartilage in Experimental Dwarfism, I. J. Bone and Joint Surg., 41-A: 1094-1100, Sept., 1959.
2. Brailsford, J. F.: Chondro-Osteo Dystrophy. J. Bone and Joint Surg., 34-B: 55-63, Feb. 1952.
3. Burrows, H. J.: Renal Rickets and Osteomalacia (Editorial). J. Bone and Joint Surg., 34-B: 168-169, May, 1952.
4. Cohen, J.: Osteopetrosis. J. Bone and Joint Surg., 33-A: 923-937.
5. Dent, C. E.: Rickets and Osteomalacia from Renal Tubule Defects. J. Bone and Joint Surg., 34-B: 266-274, May, 1952.
6. Dent, C. E.; Harris, H.: Hereditary Forms of Rickets and Osteomalacia. J. Bone and Joint Surg., 36-B: 204-224, Feb. 1956.
7. Enticknap, J. B.: Albers-Schonberg Disease. J. Bone and Joint Surg., 36-B: 123-131, Feb., 1954.
8. Fairbank, Sir Thomas: An Atlas of General Affections of the Skeleton. E. and S. Livingston Ltd., Edinburgh, 1951.
9. Gram, P. B.; Fleming, J. L.; Frame, B.; Fine, G.: Metaphyseal Chondrodysplasia of Jansen. J. Bone and Joint Surg., 41-A: 951-959, July, 1959.
10. Pederson, H. E.; McConoll, H. R.: Vitamin-Resistant Rickets. J. Bone and Joint Surg., 33-A: 203-218, Jan., 1951.
11. Stein, I.; Stein, R. O.; Beller, M. L.: Living Bone. J. B. Lippincott Co., Philadelphia, 1955.

Impression on Panectyl
A New Antipruritic Drug

A. C. Kristof and J. M. Huot
St. Boniface, Man.

Itching is a sensation caused by subthreshold stimulation of pain-receptor nerve endings in the skin (Schoch). The cause of this stimulation can vary widely. It is produced whenever physical (heat, rubbing, etc.) or chemical (toxic, metabolic, acid, etc.) irritation affects the skin. It also appears if there is hypersensitiveness of the perceptive or conducting nerves, or of the central nervous system. Thus it is a symptom of several dermatological conditions or systemic diseases (allergic, metabolic, etc.).

No really satisfactory method is as yet available for the control of pruritis.

The symptomatic control of itching can be achieved by local procedures (cold, heat, local anesthetics, irradiation, etc.), systemic drugs (steroids, antihistamines, etc.), central-action drugs (sedatives, tranquillizers, etc.). The basic aim should be the treatment of the underlying disease, and it should be carried out along with symptomatic treatment.

Trimeprazine*, a derivative of phenothiazine, was recently developed and used for the control of itching. Chemically it is related to promethazine (Phenergan) and chlorpromazine (Largactil). It has varied pharmacological effects, which are described by Callaway and Olansky[2]: Tranquilization, sedation, histamine antagonism and muscle relaxant.

Its pharmacological activity has been similarly evaluated by Schoch et al. They found a strong histamine antagonism, mild sedative action and a potent serotonin antagonism. Pellerat emphasizes the tranquillizing action of trimeprazine. He reminds that in certain skin conditions, where antihistamines had failed (symptoms were not due to histamine liberation) Largactil was of help, proving the frequent psychosomatic connections of dermatoses. He concluded that "The combined neuroleptic and antihistamine properties of this phenothiazine led us to suppose that the compound should have a much broader spectrum of action and a more extensive range of indications than any previous medications"[3].

It is generally agreed by the authors[1, 2, 3, 4, 5, 6] that the drug is an excellent antipruritic, but it has no direct effect on the skin lesions, there is only a reduction or suppression of lesions caused by scratching[3]. Its excellent sedative and hypnotic action restores the disturbed night sleep and relieves the anxiety associated with dermatoses[3]. It was found useful for the initial treatment in hospitalized patients of any type of pruritis[1], but it could not be considered a causal therapy and parallel systemic treatment had to be performed[3, 4].

Trimeprazine is available as 2.5, 5 and 10 mg. tablets.

Concerning the dosage: the routine initial dosage for adults would be 5 mg. three times daily and at bedtime[2]. Pillsbury et al[1] suggest that heavy initial doses should be given in hospital treatment of severe cases — up to 10 mg. four times a day. On such dosage patients would sleep most of the time. For outpatients a progressive dosage is desirable, starting with 2.5 mg. at bedtime. The doses given by Schoch et al ranged from 2.5 mg. to 40 mg. a day, averaging between 2.5 - 15 mg. per diem. The

*Trade-mark: PANECTYL, Poulenc Ltd., Montreal.

longest treatments were 10 months[1] and 9 months[4] respectively. Trimeprazine can successfully be combined with steroids permitting decrease of the steroid dosage[1].

Pillsbury et al obtained 70% good to excellent results on 40 patients with atopic, contact, eczematous, or herpetiform dermatitis; neuro-dermatitis; lichen planus; infantile eczema; pruritus anis, vulvae, or senilis.

Callaway and Olansky treated 85 patients for pruritus caused by dermatoses. The results were: excellent 24, good 46, fair 13, no results 1. They emphasize the excellent results in Hodgkin's disease, lichen planus and chicken-pox. Pellerat and his associates reported on 110 cases of dermatoses: eczema, urticaria, neurodermatitis, herpes zoster. They had 60 good results, 36 satisfactory but incomplete relief of pruritus, and 14 failures.

Schoch et al had good to excellent responses in 73% of the patients treated with trimeprazine. Compared with the action of Largactil, effect of trimeprazine was superior in 65, equal in 22 and inferior in 12% of 125 patients[4], while in another series of 25 it was found generally more effective than Largactil[3].

Side effects were generally infrequent. Pillsbury et al did not notice any cutaneous, hepatic or hematological side effect. Callaway and Olansky reported some drowsiness but it was uncommon. Pellerat met with daytime sleepiness, rare vertigo and asthenia. Schoch et al found drowsiness and vague malaise.

Clinical Material and Results

We administered trimeprazine (Panectyl) to 42 patients with various skin conditions, where pruritus was one of the leading symptoms. The results were judged excellent for complete relief — good where little itching remained — fair when some relief was obtained and not good, where no relief was noted. The drug was given orally in 2.5 mg., 5 mg. and 10 mg. doses, usually three times daily after meals. Where drowsiness or daytime sleepiness was complained of, the dose was shifted to evening administration. Our overall results were:

Excellent	8
Good	23
Fair	6
No result	5

The following table indicates the results in each group:

No. of Cases	Diagnosis	Excellent	Good	Fair	No Results
10	Ano-genital pruritis	2	5	1	2
8	Allergic (focal) dermatitis	3	5	—	—
6	Contact dermatitis	2	2	—	2
3	Herpes zoster	1	2	—	—
3	Herpes facialis	—	2	1	—
3	Burns	—	2	1	—
2	Psoriasis	—	—	1	1
2	Neurodermatosis	—	1	1	—
2	Stasis dermatosis	—	2	—	—
2	Mycotic dermatitis	—	2	—	—
1	Dermatitis capitis	—	—	1	—
42	Total	8	23	6	5

So actually 31 patients out of 42 responded excellently or well. The results were generally achieved in a short time, usually within the first 24-48 hours after commencement of treatment.

Here are a few typical cases:

A patient with contact dermatitis of unknown origin for one year was relieved of her pruritus after the first day on 10 mg. of trimeprazine t.i.d. where other therapies (steroids, calamine, etc.) had failed. An elderly patient with pruritus vulvae responded after two days to 5 mg. t.i.d, before her diabetes was discovered and controlled and where different ointments, analgesics and steroids had failed.

Out of 3 cases of herpes zoster, one obtained relief of pain with early desiccation, in the two others pain disappeared. We used trimeprazine in 3 children with extensive burns in the healing stage where marked itching prevented sleep on account of uncontrollable scratching. One of these children tore off her dressing every night due to intolerable itching. Two responded well to trimeprazine and the elimination of scratching accelerated the healing. Two patients with psoriasis were treated with 10 mg. t.i.d; in one case treatment had to be stopped because of pronounced vertigo and drowsiness, the second showed only fair control of itching.

Side effects were infrequent and not serious. Except for one case of vertigo, no treatment had to be discontinued because of untoward effects. Moderate, or mild drowsiness was noticed in a few cases, mostly at the beginning of treatment. Adjustment of dosage and apparent increase in tolerance usually overcame these side effects.

In conclusion, it should be noted that, while Panectyl was being used no other anti-pruritic therapy was administered in order to study exclusively the effects of Panectyl.

Summary

In 42 cases of pruritus of different origins Panectyl was given, and in 31 cases good or excellent results were obtained. It was given often before specific diagnosis was made, or where no local or systemic disease could be found (pruritus vulvae).

Except in 3 cases of herpes zoster where Panectyl appeared to accelerate healing and relieve pain, no change other than relief of itching was noted.

References

1. Pillsbury, D. M., Shelley, W. B., Hambrick, G. W., Hamilton, W. L. and Messenger, A. L.: Curr. News in dermatology, 1957, Nov.
2. Callaway, J., Olansky, S.: North Carolina Medical Journal, 18: 320-321, 1957.
3. Pellerat, M. J.: Thérapeutique Dermatologique et allergologique, 1957, p. 100, Masson & Cie, edit.
4. Schoch, E. P., Jr., Schoch, A., Alexander, L. J.: At the 107th Annual Meeting of the A.M.A. in San Francisco, 23 June, 1958.
5. Hudson, A. L.: C.M.A.J., vol. 80, Jan. 15th, 1959, p. 125.
6. Panaccio, V.: C.M.A.J., vol. 80, June 1st, 1959, pp. 885-886.

We wish to express our thanks to Poulenc Ltd. who supplied the Panectyl for these trials.

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Manitoba Cancer Incidence Study
Fourth Progress Report

Two full years have now elapsed since the Cancer Incidence Study was undertaken on January 1st, 1958, in Manitoba at the request of the National Cancer Institute of Canada. This study followed a trial period from October 1st to December 31st, 1957. A brief review together with a summary of the statistical data to November, 1959, may be of interest. The complete statistical data for the two years will shortly be available and will be published.

In initial previous reports the history of the Manitoba Cancer Institute, which was created in 1930, was reviewed. The formation of a Cancer Follow up Service and a Central Cancer Registry has for many years resulted in the accumulation of the best cancer data in Canada. The success of the progress was, of course, largely due to the interest and co-operation of the Manitoba Physicians. Since the cancer incidence is the number of new cases which arise in any specific period of time, it becomes a measure of the cancer problem in any given area. The National Cancer Institute of Canada was very anxious to set up reliable incidence studies in all the Provinces in Canada so that results could be compared both in Canada and with the rest of the world. Since Manitoba was already recording cancer data, it was suggested that a cancer incidence study be undertaken to evaluate the reliability of cancer reporting in Manitoba with the hope that if deficiencies were found, ways and means to improve on these could be worked out.

The co-operation of the Manitoba Physicians has been most commendable and we can now record that we have accumulated data which is the envy of not only the other Provinces in Canada, but many cancer organizations throughout the world.

The last statistical review reveals the following interesting facts: In 1954 Manitoba's recorded cancer incidence was 2.56 per 1,000 population and this rose slightly to 2.66 per 1,000 in 1957. Probably as a result of the cancer incidence study, the incidence rose to 2.92 per 1,000 in 1958, and it is estimated that the incidence will be at least 3.00 per 1,000 for 1959. This is one of the highest incidence recorded anywhere. The study suggests that is due to more complete and better reporting rather than an actual higher cancer incidence.

Comparable figures from other Provinces in Canada may be of interest. In Newfoundland where an incidence study was undertaken just prior to that in Manitoba, the figure now stands between 1 and 2 per 1,000 cases.

In 1956, Saskatchewan recorded an incidence of 2.46 per 1,000, whereas Alberta recorded 1.87 per 1,000 in 1958. No data is available as yet from the other Provinces where cancer programs are in various stages of development.

The number of Doctors in Manitoba who have now reported cases of cancer rose from 500 on March 11, 1959, to a present level of 566 with the following breakdown:

146 doctors credited with 1 case only.
94 doctors credited with 2 cases only.
50 doctors credited with 3 cases only.
81 doctors credited with 4 - 5 cases only.
95 doctors credited with 6 - 10 cases only.
56 doctors credited with 11 - 20 cases only.
44 doctors credited with over 20 cases.

The initial source of reports for the complete year of 1958 was as follows:

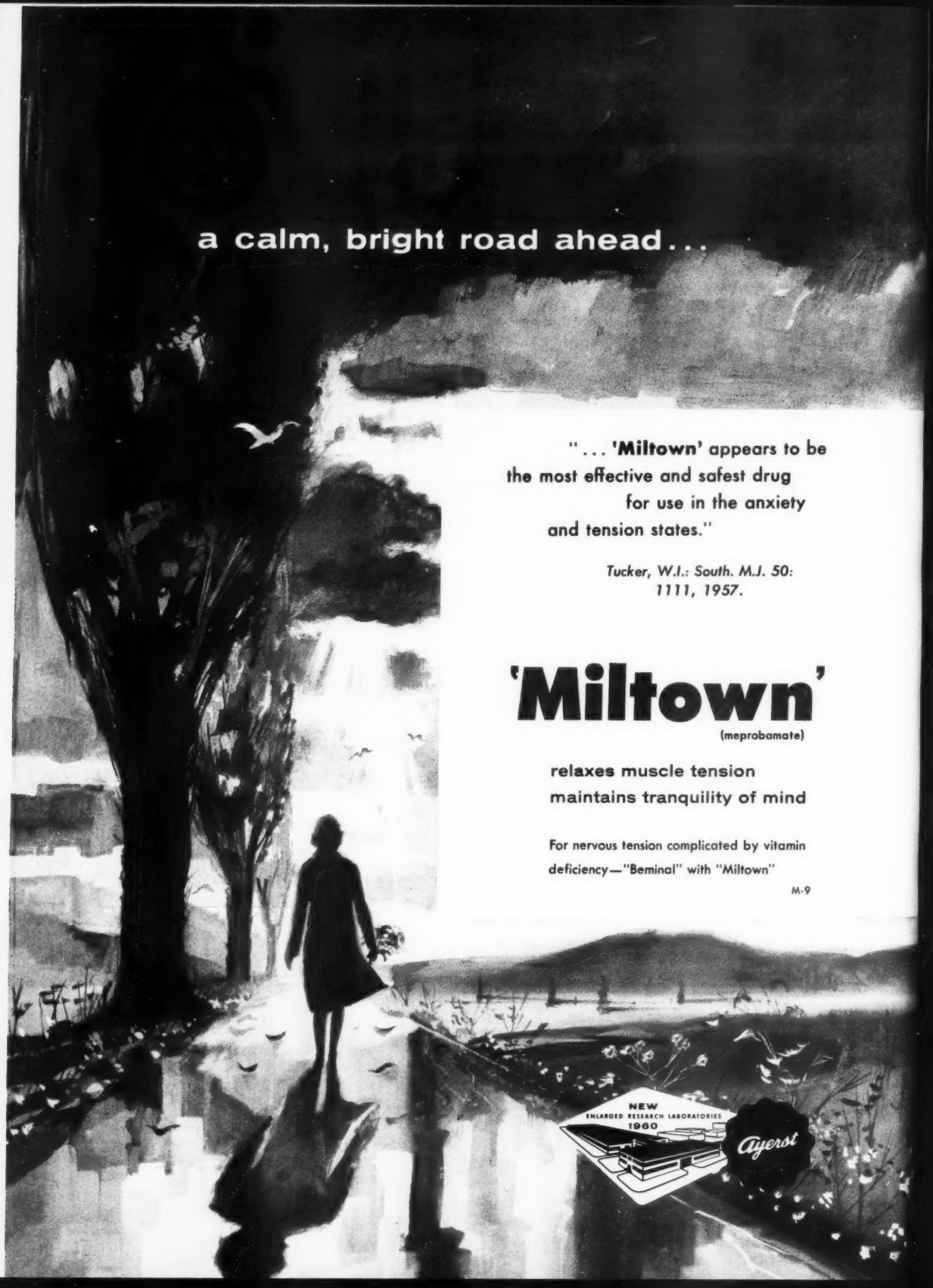
Winnipeg General and St. Boniface Hospitals	1311
Other Hospitals in Manitoba	550
Manitoba Cancer Foundation Biopsy Service	316
Death Notifications as received from Vital Statistics	424
Doctors and Clinics	86
Total for calendar year 1958	2687

It is further noted that 49% of the total new cases were resident in the Greater Winnipeg area; 39% were rural; 5% were from outside of the Province; and 7% could not be classified because of inadequate data.

On cross checking from a number of sources, it is evident that a small number of cancers are still not being reported.

The Cancer Incidence Study Committee has agreed that with the excellent and very commendable co-operation of the medical profession of Manitoba together with the great interest and co-operation of the hospitals of Manitoba, real progress has been made. These figures being accumulated are of great value and interest, and it is proposed to continue this study. The introduction of the new envelope type of reporting forms appears to be a definite improvement, and it is hoped that these will be more convenient for the Doctor.

D. W. Penner.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Tucker, W.I.: South. M.J. 50: 1111, 1957.
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1960
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ANNUAL MEETING

Manitoba Medical Association

(Canadian Medical Association, Manitoba Division)

September 26th and 27th, 1960

MARLBOROUGH HOTEL, WINNIPEG

TENTATIVE PROGRAM

Guest Speakers

Dr. E. V. Allen, Mayo Clinic, Rochester, Minnesota.
Dr. H. E. Bacon, Professor and Head, Department of Proctology, Temple Univesity Medical Center, Philadelphia.
Dr. D. G. Cameron, Physician-in-Chief, Montreal General Hospital, Montreal.
Hon. Geo. Johnson, M.D., Minister of Health and Public Welfare, Province of Manitoba.
Dr. R. A. L. Macbeth, Associate Professor of Surgery, University of Alberta, Edmonton.
Dr. R. M. Parsons, President, Canadian Medical Association, Red Deer, Alberta.
Dr. Philip Thorek, Associate Professor of Surgery, University of Illinois, Chicago.

Monday, September 26th

Scientific Sessions in the Sky Room

Morning

8.00 Film.
8.55 Welcome — Dr. F. G. Allison, President of the Association.
9.00 Problems in the Early Phase of Myocardial Infarction,
Dr. T. E. Cuddy.
9.30 Reiter's Syndrome with Special Reference to Polyarthritis,
Dr. P. N. Porritt.
10.00 Cancer of the Colon and Rectum,
Dr. H. E. Bacon.
10.30 Intermission — Visit the Exhibits.
11.00 Acute Surgical Emergencies Complicating Pregnancy,
Dr. R. A. L. Macbeth.
11.30 The Natural History of Arteriosclerosis Obliterans,
Dr. E. V. Allen.
12.15 Luncheon.
Guest Speaker: Mon. Geo. Johnson, Minister of Health and Public Welfare.

Afternoon

2.00 Modern Concepts of the Diagnosis and Treatment of Common Anaemias,
Dr. D. G. Cameron.
2.30 Congenital Heart Disease — Survey of Children's Hospital Experience,
Drs. G. R. Cumming, C. C. Ferguson, L. L. Whytehead and W. Zingg.
3.30 Intermission — Visit the Exhibits.
4.00 Panel — Kidney Diseases from General Practitioner Standpoint,
Chairman: Dr. A. E. Thomson.

Evening

6.00 President's Dinner — Vice Regal Suite, Royal Alexandra Hotel.
8.00 Sectional Meetings:
Health Officers' Section, Manitoba Public Health Association.
Section of General Practice.
Section of Internal Medicine.
Section of Obstetrics and Gynaecology.

Tuesday, September 27th

Morning

8.00 Film.
9.00 The Healthy Perinate: A Triple Entente,
Dr. A. D. J. DePape.
9.30 Management of Barbiturate Poisoning,
Dr. R. Cherniack.
10.00 Clinical Diagnosis and Modern Concepts of Steatorrhea,
Dr. D. G. Cameron.
10.30 Intermission — Visit the Exhibits.
11.00 Trends in the Surgical Treatment of Colonic Diverticulitis,
Dr. R. A. L. Macbeth.
11.30 If I Had an Ulcer,
Dr. P. Thorek.

Noon

12.15 Luncheon.
Guest Speaker: Dr. R. M. Parsons, President, Canadian Medical Association.

Afternoon

2.00 Only an Appendix,
Dr. P. Thorek.
2.30 To be announced.
3.00 Annual Business Session — Members only.
Reports of Committees.

Evening

8.00 Annual Business Session — Continued.
Report of Nominating Committee.
Presidential Address.
Economic Matters.
Manitoba Medical Service.

Thursday, September 29th

Sky Room

Evening

6.30 Reception.
7.15 Dinner.
9.00 Dancing.

ANNUAL MEETING
INTERNATIONAL COLLEGE OF SURGEONS
CANADIAN AND UNITED STATES SECTIONS
Marlborough Hotel, Winnipeg
September 28th and 29th, 1960
PROGRAMME

Wednesday, September 28th, 1960

Morning

8.00 Films.
Presiding: Dr. F. Burgoyne, Winnipeg, Man.

9.00 Welcome.
Presiding: Dr. S. S. Peikoff, Winnipeg, Man., Canada.
Secretary: Dr. E. N. C. McAmmond, Vancouver, B.C., Canada.

9.30 Scientific Session.
Presiding: Dr. C. W. Burns, Winnipeg, Man., Canada.
Secretary: Dr. L. R. Rabson, Winnipeg, Man., Canada.

9.30 "The Prevention of Common Duct Strictures,"
Dr. L. H. Appleby, Vancouver, B.C., Canada.

9.50 "Practical Aspects of Diseases of the Oesophagus,"
Dr. P. Thorek, Chicago, Illinois, U.S.A.

10.10 "Vesico Vaginal Fistulas,"
Dr. G. J. Strean, Montreal, Quebec, Canada.

10.30 Exhibits.

11.00 a.m.
Presiding: Dr. A. C. Abbott, Winnipeg, Man., Canada.
Secretary: Dr. C. E. Corrigan, Winnipeg, Man., Canada.

11.00 "Surgical Treatment of Aortic Regurgitation,"
Dr. Charles P. Bailey, Philadelphia, Pa.

11.20 "Jaundice — Its Surgical Significance and Treatment,"
Dr. J. B. O'Donoghue, Chicago, Illinois, U.S.A.

11.40 Visiting Surgeon.

Noon

12.00 Luncheon:
Justice Samuel Freedman, Winnipeg, Man., Canada, Chancellor of the University of Manitoba.
Dr. Lennox E. Bell, Winnipeg, Man., Canada, Dean of the Manitoba Medical College.

Afternoon

Presiding: Dr. Horace Ayers, New York.
Secretary: Dr. J. B. O'Donoghue, Chicago, Ill.

2.00 "Management of Complicated Malignant Lesions of the Colon,"
Dr. Claude J. Hunt, Kansas City, Missouri, U.S.A.

2.20 "Obesity,"
Mr. Patrick Clarkson, London, England.

2.40 "The Surgical Treatment of Atrial Septal Defects,"
Professor Mario Dogliotti, Torino, Italy.

3.00 "Surgery of the Common Duct,"
Professor Jose Soler-Roig, Barcelona, Spain.

3.20 "Effects of Auditory Stimulation on Genital Function and Reproduction,"
Professor Bernhard Zondek, Jerusalem, Israel.

3.40 "An Experience of 3,000 Vaginal Hysterectomies,"
Mr. V. B. Green-Armytage, London, England.

Evening

6.00 Cocktails.

7.00 Banquet and Convocation.

Thursday, September 29th, 1960

Morning

8.00 Films.
Presiding: Dr. F. Burgoyne, Winnipeg, Man.

9.00 Scientific Session.
Presiding: Dr. M. R. MacCharles, Winnipeg, Man., Canada.
Secretary: Dr. Kenneth Trueman, Winnipeg, Man., Canada.

9.00 "Cancer of the Larynx,"
Dr. A. A. Grossman, Montreal, Quebec, Canada.

9.20 "The Diagnosis and Treatment of Tumors and Cysts of the Neck,"
Dr. A. S. Jackson, Madison, Wisconsin, U.S.A.

9.40 "Post-Operative Complications Following Gastrectomy,"
Dr. J. M. de los Reyes, Los Angeles, Calif., U.S.A.

10.00 Exhibits.

10.30 a.m.
Presiding: Dr. C. B. Stewart, Winnipeg, Man., Canada.
Secretary: Dr. J. T. MacDougall, Winnipeg, Man., Canada.

10.30 "Planning of Breast Incision for Biopsy or Radical Mastectomy,"
Dr. Ralph Coffey, Kansas City, Missouri.

10.50 "The Surgical Treatment of Acute Arterial Thrombosis in the Lower Extremity,"
Dr. H. P. Totten, Philadelphia, Pennsylvania, U.S.A.

11.10 "Blood Volume and Its Importance in Surgery,"
Dr. M. Sadove, Chicago, Illinois, U.S.A.

11.30 "How to Prevent Non-Union or Delayed Union in Fractures,"
Dr. E. L. Compere, Chicago, Illinois, U.S.A.

Noon

12.00 Luncheon:
Dr. Hugh Saunderson, Winnipeg, Manitoba, Canada, President of the University of Manitoba.
Dr. A. A. Klass, Winnipeg, Manitoba, Canada.

Afternoon

2.00 Sectional Meetings.

SECTIONAL PROGRAM

Thursday, September 29th, 1960

E. E. N. T. PROGRAM

General Chairman: Dr. Arnold Grossman, Montreal, Quebec, Canada.

Dr. Henry M. Scheer, New York City, New York, U.S.A.

Local Chairman: Dr. Maurice M. Pierce, Winnipeg, Manitoba, Canada.

Secretary: Dr. R. M. Ramsay, Winnipeg Manitoba, Canada.

2.00 "Assessment of Various Stages and Operative Techniques for Otosclerosis."
Dr. Samuel Rosen, New York City, New York, U.S.A.
Discussion to be opened by Dr. M. M. Pierce, Winnipeg, Manitoba, Canada.

2.40 "Review of the Literature on Serous Otitis Media in Children."
Dr. Louis Savitt, Chicago, Illinois, U.S.A.

3.10 "The Radiological Diagnosis of Otolaryngologic and Ophthalmologic Facial Trauma."
Dr. Everett F. Crutchlow, Montreal, Quebec, Canada.

3.40 Symposium on "Congenital Glaucoma and Cataracts."
Moderator: Dr. Oscar B. Nugent, Chicago, Illinois, U.S.A.

1) Dr. Girolomo Bonaccolto, New York City, New York, U.S.A.
2) Dr. R. M. Ramsay, Winnipeg, Manitoba, Canada.
3) Dr. Howard Reed, Winnipeg, Manitoba, Canada.

ORTHOPAEDICS SECTIONAL PROGRAM

Afternoon

2.00 The Painful Hip — Symposium.
Presiding: Dr. Robert Tucker, Winnipeg, Manitoba, Canada.
Members of Panel:

1) Dr. W. B. MacKinnon, Winnipeg, Man., Canada.
2) Dr. D. M. Bruser, Winnipeg, Man., Canada.
3) Dr. Chas. Hollenberg, Winnipeg, Man., Canada.
4) Dr. Elmer James, Winnipeg, Man., Canada.

3.00 "The Use of the Knowles Pin."
Dr. D. R. Bigelow, Winnipeg, Man., Canada.

3.20 "The Use of Staples in Limb Length Discrepancy."
Dr. K. C. McGibbon, Winnipeg, Man., Canada.

3.40 "A Review of 250 Intertrochanteric Fractures of Femur."
Dr. Edward Danchuk, Winnipeg, Man., Canada.

4.00 "A Review of Fractures of Tibia and Fibula" (from the Deer Lodge Hospital),
Dr. R. N. Rogue, Winnipeg, Man., Canada.

4.20 "Research Experience with Ostamer."
Dr. Richard McComb, Winnipeg, Man., Canada.

UROLOGICAL SECTIONAL PROGRAM

Presiding: Dr. C. B. Stewart, Winnipeg, Man., Canada.
Secretary: Dr. David Swartz, Winnipeg, Man., Canada.

"Renal Transplant in Twins."
Dr. K. J. MacKinnon, Montreal Quebec, Canada.

"Urethrography As An Aid in Selecting the Proper Method for Prostatectomy."
Dr. Leopold Brodny.

"Bladder Complications Due to Large Bowel Pathology."
Dr. Gershom Thompson, Mayo Clinic, Rochester, Minnesota, U.S.A.

"Pitfalls and Complications in Uretero-Ileo-Sigmoidostomy."
Dr. A. C. Abobtt, Winnipeg, Manitoba, Canada.

ANAESTHESIOLOGY SECTIONAL PROGRAM

Presiding: Dr. Max Minuk, Winnipeg, Man., Canada.

Afternoon

2.00 "Diagnosis and Treatment of Reflex Sympathetic Dystrophy."
Dr. David Tass, Winnipeg, Manitoba (St. Boniface Hospital).

2.45 "The Use and Abuse of Monitoring Devices During Surgery and Anaesthesia."
Dr. Christopher Wolkenstein, Winnipeg, Man. (Winnipeg General Hospital).

3.30 Exhibits.

4.00 Panel on "Hypothermia"
Chairman: Dr. M. S. Sadove, University of Illinois.
Members of Panel:

1) Dr. R. W. Milner, St. Boniface Hospital.
2) Dr. S. Kantor, Misericordia Hospital.
3) Dr. G. Semelka, St. Boniface Hospital.

4.45 Film on "Pediatric Anaesthesia"
Prepared and presented by:
Dr. T. McCaughey, Winnipeg Children's Hospital.

OBSTETRICS AND GYNAECOLOGY PROGRAM

Presiding: Dr. Elinor Black, Winnipeg, Man., Canada.
Secretary: Dr. R. L. Willows, Winnipeg, Man., Canada.

Afternoon

2.00 "Foetal Electrocardiography."
Dr. Lionel Cruickshank, Winnipeg, Manitoba.

2.30 "Estriol Excretion Levels and Placental Function in Advanced Pregnancy."
Dr. Bernhard Zondek, Jerusalem, Israel.

3.00 "Repair of Ureteral and Urethral Fistulae"— Symposium:
Moderator: Dr. George J. Strean, Montreal, Quebec.
Members of Panel:

1) Dr. Jean Paul Legault, Montreal, Que.
2) Dr. Clarence Schneiderman, Montreal, Que.
3) Dr. T. M. Roulston, Winnipeg, Man.

Mrs. M. R., 75-year-old underweight patient:

Puts on 13¼ needed pounds in just 6 weeks;

gains 1" on right biceps;

forces mercury column 14 mm. higher in cuff-compression test of muscle strength;

feels better than she has in 2 years.

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Danabol is a new tissue-building agent with distinct advantages over previous compounds of this type.

By aiding the deposition, synthesis, and utilization of protein, Danabol affords these benefits in the underweight elderly patients with or without serious disease and in patients who are chronically ill or convalescent:

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- Speeds healing of wounds; hastens postoperative recovery and convalescence from a variety of diseases.
- Strengthens skeletal structure; often relieves pain and increases mobility in osteoporosis.
- Improves general physical status; helps to revive a sense of well-being.

Economical, convenient to administer, and almost without virilizing effects, Danabol overcomes the disadvantages that have restricted use of tissue-building compounds in the past. Older patients, whose funds are often limited, will particularly welcome the low cost of Danabol therapy.

Complete information available on request.

SUPPLIED: *Tablets*, 5 mg. (pink, scored); bottles of 100 and 500.

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New, orally effective tissue builder

Converts protein to working weight in wasting or debilitated patients

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Editorial

S. Vaisrub, M.D., M.R.C.P. (Lond.), F.R.C.P. (C.), F.A.C.P., Editor

The 52nd Annual Meeting of the Manitoba Medical Association

There is a certain local radio announcer who never fails to refer to our city as Wonderful Winnipeg. Appealing as it may be to our loyal ears, this euphonious alliteration has a definite anesthetic effect on our critical faculty for objective evaluation of truth. But, then, does it really matter? Did not a famous philosopher once say: "if you want to believe it, it is true."

Taking our cue from the alliterative radio enthusiast we now enlist "apt alliteration's artful aid" in welcoming to Wonderful Winnipeg in Magnificent Manitoba that most mandatory of all the medical meetings — the Annual Meeting of the Manitoba Medical Association.

Rummaging through our stock of superlatives, we find that they have been all used up in previous years for similar festive occasions. Thus forced to fall back on the matter-of-fact language of unadorned truth, we state simply that the Meeting promises to be instructive, interesting and informative. The scientific program is well balanced. Distinguished guests as well as local talent will participate in panels and lectures on subjects of topical interest. The business program as well is fraught with promise of excitement. Revised fee schedules, events in our neighboring province, professional policy are but a few of the choice items.

Don't miss the fun.

☆

Annual Meeting of the International College of Surgeons

Canadian and United States Sections

Winnipeg is fast becoming a popular convention center. Although devoid of many attractions—the boardwalk of Atlantic City, the smog of Los Angeles, the mountain view of Montreal, the gay abandon of Toronto—it gets by very nicely on the fame of its floods, the notoriety of its Eskimos (Perry Como be thanked) and the repute of its hospitality. A frequent host to the provincial, regional and national gatherings, it has now eclipsed all its competitors by attracting to its gates an international body of repute—the International College of Surgeons.

Conceived by the late Dr. Max Thorek of Chicago, founded in Geneva in 1935 the I.C.S. has grown from modest proportions to an impressive membership of over 12,000. Dedicated to the cause of surgical advancement, it has pursued its goals with remarkable energy. Through its frequent regional sectional and international meetings, as well as its numerous post-graduate courses and generous post-graduate scholarships it has helped in the dissemination of surgical knowledge through widely scattered areas of the globe.

International in its scope the I.C.S. can embark upon projects which transcend national boundaries. One such ambitious project is the International Surgeons' Hall of Fame in Chicago, which by honoring those who dedicated themselves to surgery, will serve as a monument to human devotion. Another worthwhile project is their School of the History of Surgery and Related Sciences. With the world as a stage, opportunities for similar imaginative undertaking become unlimited.

Let us welcome our surgical guests with an assurance that our hospitality too can be unlimited.

☆

The Delectable Mountains

"They came to the Delectable Mountains"
John Bunyan. Pilgrim's Progress. Part I.

Sight seeing may be quite exhausting, for in addition to mere passive absorption of visual impressions it involves an active process of storing up memories in the subconscious mind for future recall to the "inward eye".

The truth of this rather unoriginal observation became apparent to your peripatetic editor during his attendance at the 93rd Annual Meeting of the C.M.A. in Banff, where drenched in beauty and saturated with splendor, he valiantly tried to combine the task of painting majestic murals on the walls of his memory's rooms with that of furnishing the latter with knicknacks of useful professional and scientific information — a superhuman task indeed.

Should, then, Annual Meetings not be held in a mountain resort, but in some dull distractionless city? Should beauty be sacrificed on the altar of efficiency? The answer is emphatically in the negative. Aù contraire, let us hold as many conventions as possible in a mountain setting, for there is something about mountains that challenges and inspires the mind of man. Mount Olympus, Mount Parnassus, Mount Sinai have for centuries symbolized the proximity to man of the great creative forces of life. Harassed and beleaguered, our profession can do with some of this inspiration.

Robitussin helps remove the cause of cough[1]

Glyceryl guaiacolate (Robitussin) exerts "the most intense and prolonged"[2] expectorant action "of practically all drugs presently used clinically as expectorants."[2] It increases the secretion of Respiratory Tract Fluid almost 200 per cent.[2]

Increased R.T.F. helps liquefy sputum,[2-4] making it less viscid and easier to raise[3] and enabling the upward-beating tracheal and bronchial cilia to become more efficient.[3,5]

And increased R.T.F. provides a demulcent effect that helps soothe dry, irritated membranes lining the respiratory passages.[1-3,6]

Through these "significantly superior"[2] expectorant effects, Robitussin increases the probability that a cough will achieve its natural purpose—that is, to remove irritants such as exudates or mucus from the respiratory tract.[1,4,5]

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glyceryl guaiacolate, 100 mg.; prophenpyridamine maleate, 7.5 mg.; and codeine phosphate, 10 mg.; in each 5 cc. teaspoonful

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references: 1. Blanchard, K., and Ford, R. A., Journal-Lancet, 74:433, 1954. 2. Cass, L. J., and Frederik, W. S., Am. Pract. Dig. Treat., 2:844, 1951. 3. Hayes, E. W., and Jacobs, L. S., Dis. Chest, 30:441, 1956. 4. Blanchard, K., and Ford, R. A., Clin. Med., 3:961, 1956. 5. Blanchard, K., and Ford, R. A., Rocky Mt. M. J., Vol. 52, No. 3, 1955. 6. Boyd, E. M., et al., Can. M. Assoc. J., 54:216, 1946.

A. H. Robins Company of Canada, Ltd., Montreal, Quebec

Mountains have served not only as sources of inspiration, but also as goals of aspiration. The ambitious mountain climber is forever looking for new Mont Blancs to scale, new Everests to conquer. The less fortunate, non athletic individual may aspire to leave his visage carved on a mountain top, or, failing this, his name linked to a mountain peak or even a mountain chain in recognition for a historic deed. Mount Field, Mount Fairholme, Mount Eisenhower stand out as tokens of gratitude and monuments to achievement.

Official recognition for great deeds, however, is often late in forthcoming. The "late" may fade away into "never", particularly, if the achievements happen to be in the field of Medicine. There is, indeed, a lamentable absence of mountains named after physicians. And this is a pity.

If we had Mount Osler, Mount Banting, Mount Collip as a backdrop for our conventions, how much more satisfying would be the view, how much more delectable—the "delectable Mountains".

Ed.

♦ ♦ ♦

Letters to The Editor

Dear Editor:

The other night, as I was blissfully sipping my post-prandial liqueur in the dimly lit nightclub, my attention was caught by the first two lines of a song emanating from the lascivious larynx of the singing entertainer. "You are a smooth operator,you are a shrewd calculator" — warbled the sensuous songstress, casting amorous glances in my direction. Intended as those lines may have been for a lover, to me they conveyed only one message — a dedication to a surgeon. "A smooth operator, a shrewd calculator"—who else but a surgeon? Tailor made, eh what?

M. Y. Alterego.

Editor's Note:

Yes, we agree. The lines do fit the surgeon to perfection, but not as a mantle of cynical innuendo. If M. Y. Alterego insinuates that surgeons are "smooth and shrewd" in matters pertaining to fees, tax returns and various financial stratagems, he is not only wrong, but totally undeserving of having this letter published in a respectable medical journal.

If, however, the quoted lines be given their proper interpretation, they would appear quite apt. It is indeed, true that qualities apparently, so ingratiating in a lover, epitomize the attributes of a good surgeon. A good surgeon is first and foremost a smooth operator. His technique is impeccable. His movements are graceful. Unperturbed he accomplishes the seemingly impossible with a minimum loss of time. A good surgeon is also a shrewd calculator, for every serious operation involves complicated calculation of fluid and electrolyte balance. Moreover—and this is by far the most important calculation—every contemplated operation requires an appraisal of indications and contraindications, and an assessment of hazards. Every operation is a calculated risk, and he who calculates well, is a good surgeon.

The nightingale of the nightclub, so grievously misinterpreted by M. Y. Alterego, has inadvertently paid a lasting tribute to a noble craft. Would she were here to welcome its numerous devotees who will flock to our city to attend the Sectional Meeting of the International College of Surgeons.

☆

Dear Editor:

The Manitoba Branch of the Canadian Physiotherapy Association feels that some clarification is necessary concerning the Physiotherapy Act of 1957. This states that anyone wishing to practice Physiotherapy in the Province of Manitoba must be registered with the Association of Physiotherapists of Manitoba, and in order to so qualify must have completed a course of training at an approved school under the auspices of the Medical Profession and be eligible for membership in the Canadian Physiotherapy Association.

When the Act came into force in March 1957 there were certain people in Manitoba practicing physiotherapy other than those of the above group. These people were organized into a group called the Manitoba Association of Physiotherapists, registered under the Company Act in 1938.

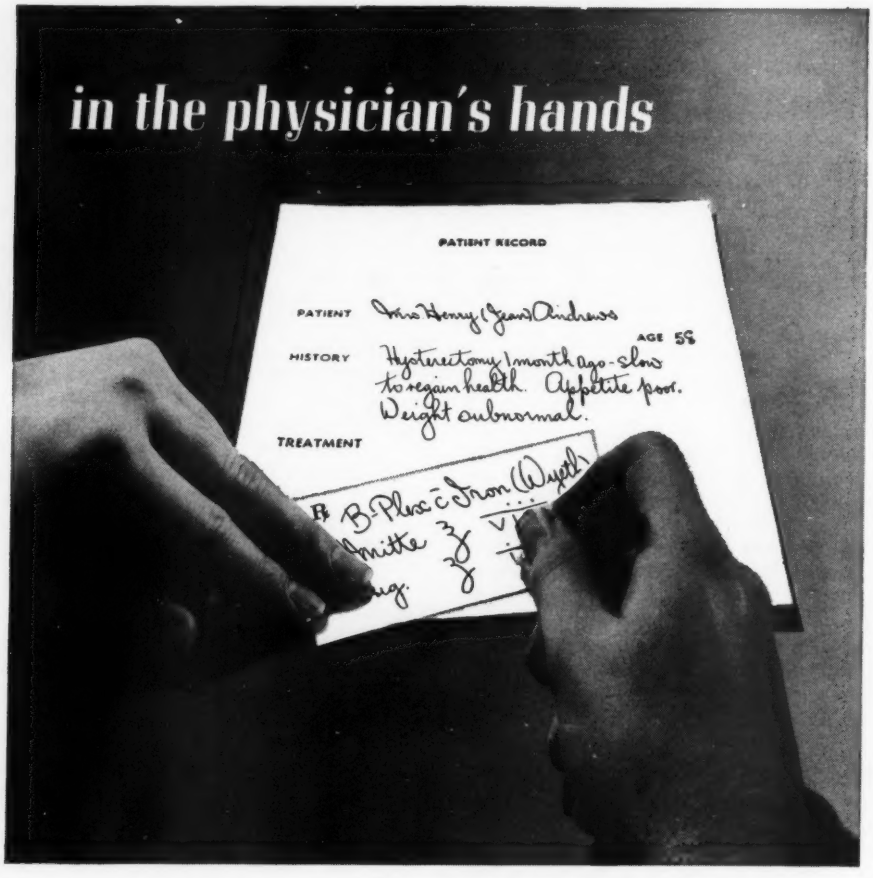
This group was dissolved in March 1957, and its members were allowed to register as initial members with the Association of Physiotherapists of Manitoba and to continue to work as prior to the Act. Registration was not by reason of their qualifications but only because of their former membership in the aforementioned group.

As of 1957 all subsequent Physiotherapists must be eligible for membership in the Canadian Physiotherapy Association and cannot treat patients without referral from the Medical Profession.

Yours truly,

(Miss) Molly W. Forbes.

President.



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Book Reviews

Communicable and Infectious Diseases, Franklin H. Top and collaborators. 4th Edition, 1960. C. V. Mosby Company, St. Louis, Mo. pp. 812, 122 figures and 15 color plates. Price $20.00.

The fast pace of advance in the field of antibiotic therapy, as well as the long strides in that of Virology rendered obsolete many books on infectious diseases, and drove many a physician into the seductive arms of the glittering pharmaceutical brochure.

To rescue him from the glamorous temptress there comes now a book which combines the qualities of comprehensiveness and dependability with that of uptodateness. The book — a fourth edition of "Communicable and Infectious Diseases" by Franklin H. Top and twenty-two collaborators —is a rich reservoir of old and new knowledge. Thoroughly revised with addition of new chapters on acute Respiratory Infections, including adenoviruses and the common cold, enteroviruses, coxsackie and ECHO Virus infections, and with many chapters rewritten by new authors, it presents a most attractive new look. Well written, well illustrated and well indexed, this book provides in addition to the clinical, pathologic, and epidemiologic aspects of diseases, a briefly summarized survey of their historic background through the centuries.

The only questionable virtue of this book is its classification, based on the portal of entry of the infectious agent. To one accustomed to think in terms of etiology and pathology, it is difficult to adjust to this criterion. It seems odd that Aseptic Meningitis should be found in the chapter on Respiratory Diseases, and Poliomyelitis in that of the Gastro-Intestinal tract. It is, however, gratifying to note that these seeming incongruities are corrected in the subdivisions of the main groups, where etiology comes into its own.

On the whole an excellent book.

S. V.

Emergencies in General Practice. Edited by C. Allan Birch, M.D., F.R.C.P., with 139 illustrations, 15 in colour. Sixth edition. E. & S. Livingstone Ltd., Edinburgh and London. 1960, pp. 751. Price $7.65. Published by McMillan of Canada.

This book with its successful record of five editions and two foreign translations boasts of many illustrious names among its contributions. Avery Jones, F. Wilkinson, A. Rae Gilchrist, Sir Robert Platt—to mention but a few—have left in it the imprint of their knowledge, experience and style. Neither a flimsy handbook of dogmatic instructions, nor a forbidding encyclopedic tome, this book offers a very readable presentation of ways and means to deal with urgent situations which demand instant action. It covers every conceivable emergency on land, sea and air, whether it be an insect bite or a radiation injury, a fit or a cardiac arrest, with a concise thoroughness which comprises pertinent information on diagnosis, pathophysiology and the rationale for prescribed therapy. It often tells the reader not only what to do, but what to say to the patient, the relatives or the police and legal authorities that may be involved. Beautifully illustrated and well indexed, this book is a most reliable and valuable guide to all practitioners who are likely to encounter sudden and unexpected situations in their daily work.

S. V.

Strong and Elwyn's Human Neuroanatomy: R. C. Truex, 4th Edition, 1959. Williams and Wilkins Co., Baltimore, 511 pp., 363 figures. $10.00.

One of the pleasant memories of those who worked at the famous Marine Biological Laboratory at Woods Hole, Massachusetts, in the 1920's is that of a quiet, helpful gentleman, Oliver Strong. A very scholarly neurologist, he was Professor of Neurology and Neurohistology at Columbia University. In 1943 he and Professor Adolph Elwyn of the same institution published the first edition of the book under review; second and third editions, edited by Professor Elwyn, appeared in 1948 and 1953 respectively. Now we have a fourth edition, edited and partly rewritten by Raymond C. Truex, Professor of Anatomy, Hahnemann Medical College, Philadelphia, a former colleague of the original authors.

Ever since the appearance of the first edition, experience has led the reviewer to look first to Strong and Elwyn for information or elucidation in its field. Why? Because it is clear, reliable, well written and beautifully illustrated. Moreover, the book lives up to its title, inasmuch as its statements and illustrations apply to man unless otherwise indicated; freedom from dubiety on this point is welcome indeed.

Professor Truex has most worthily maintained the traditional excellence of this book. The changes in the present edition are indicated in the preface, and need not be repeated here.

Lest this review be thought too laudatory, the reviewer looked hard for something to criticize. He found one or two minor points. In his opinion, ipsilateral pyramidal control and its anatomical basis receive inadequate attention, as do the anatomical aspects of referred pain; he could find no mention at all of the body image and its possible anatomical basis. And the hyphenation of Argyll Robertson on page 352 is enough to cause that distinguished ophthalmologist to turn in his grave!

But these criticisms should not be taken too seriously. It is the commendations that are intended seriously.

I. M. T.

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Association Page

Nominating Committee Report
Manitoba Medical Association

Chapter 6, Section 1, of the By-laws of the Association states that the Nominating Committee shall consist of the President and the two most recent Past Presidents. This Committee shall be required to bring nominations before the General Meeting for the elective offices and elective nominees of the Association for the succeeding year. They shall present these nominations to the Executive Committee in such time that they may be considered and published in the official journal at least one month before the Annual Meeting or failing that possibility, mailed to the membership at least two weeks before the Annual Meeting. The Nominating Committee shall bring forward one or more names for each position.

The following nominations are submitted:

President:
Dr. H. L. McNicol, Flin Flon

First Vice-President:
Dr. K. R. Trueman, Winnipeg

Second Vice-President:
Dr. K. I. Johnson, Pine Falls
Dr. W. Malyska, Deloraine

Honorary Secretary:
Dr. F. W. DuVal, Winnipeg
Dr. D. L. Kippen, Winnipeg

Honorary Treasurer:
Dr. W. S. Neal, Winnipeg

Winnipeg Member-at-Large:
Dr. R. O. Flett, Winnipeg
Dr. C. H. Murphy, Winnipeg

Rural Member-at-Large:
Dr. J. F. Choate, Steinbach
Dr. G. T. McNeill, Carberry

M.M.S. Board of Trustees:
(six to be selected)
Dr. G. L. Adamson, Winnipeg
Dr. G. F. Boult, Winnipeg
Dr. W. D. Bowman, Winnipeg
Dr. E. G. Brownell, Winnipeg
Dr. N. I. Corne, Winnipeg
Dr. R. C. Davison, Winnipeg
Dr. G. P. Fahrni, Winnipeg
Dr. A. G. Henderson, Winnipeg
Dr. H. G. Hurst, Winnipeg
Dr. J. H. McBeath, Winnipeg
Dr. R. T. Ross, Winnipeg
Dr. J. A. Swan, Winnipeg
Dr. G. S. Varnam, Winnipeg

Central District Medical Society

A meeting of the Central District Medical Society was held at the Gladstone Hospital at 3:00 p.m. (D.S.T.) on Wednesday, May 25th, 1960.

Present were: Drs. G. Lowther, President, Portage la Prairie; G. J. Smith, Vice-President, Gladstone; C. M. Thomas, Secretary-Treasurer, Portage la Prairie; E. R. Ford, MacGregor; S. K. Kemkaran, Portage la Prairie; J. H. More, Gladstone; J. M. Neilson, R.C.A.F., Macdonald; D. W. Rae, Portage la Prairie; J. C. Rennie, Portage la Prairie; D. R. Bigelow, Winnipeg; M. T. Macfarland, Winnipeg; J. P. MacLean, Winnipeg; A. Zipursky, Winnipeg.

Afternoon coffee was served by the Matron and staff members.

The scientific program was chaired by Dr. G. J. Smith. The speakers were: Dr. D. R. Bigelow on "Fractures of the Lower Limb"; Dr. J. P. Maclean on "Electrolyte Balance After Surgery" and Dr. A. Zipursky on "Anaemia."

A reception and dinner were held at the Travelers Hotel followed by a business session at which the following officers were elected for 1960-61:

President, Dr. G. H. Lowther, Portage la Prairie
Vice-President, Dr. J. H. More, Gladstone
Sec.-Treas., Dr. G. Hamlin, Portage la Prairie
Representative to M.M.A. Executive Committee,
Dr. C. M. Thomas, Portage la Prairie.

Following discussion of a letter from M.M.A. re Prenatal services for certain areas of the Province, the Secretary was requested to reply to M.M.A. A letter is also to be sent about the Drivers' Appeal Board suggested by the Medical Aspects of Traffic Accidents Committee. Also discussed by Drs. Thomas and Macfarland were various items of Association and College business as follows: (1) Saskatchewan Election on June 8th, C.M.A. Annual Meeting June 13-18, Annual Meeting September 26-27, I.C.S. Meeting September 28-29; (2) Discipline problems of the College of Physicians and Surgeons; (3) Fee Schedule - P.P.C. - W.C.B. - M.M.S.; (4) Tissue Committees; (5) Social Allowances Medicare.

M. T. Macfarland.

Northern District Medical Society

A meeting of the Northern District Medical Society was held at Swan River Hospital on Saturday, May 28th, 1960.

Present were: Drs. J. L. Honig, President, Swan River; M. Potoski, Secretary-Treasurer, Dauphin; O. Hierz, Benito; R. E. Hicks, Dauphin; T. K. Kolkind, Dauphin; W. L. Marshall, Dauphin; B. E. Symchych, Dauphin; A. P. Cameron, Swan River

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CONTROL WITHOUT A DIAPHRAGM

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HIGHLY SPERMICIDAL[1] ACCEPTABLE TO PATIENT[2]

1. Wolf, Olsen and Tyler: Obstetrics and Gynecology, Vol. 10, Sept., 1957.
2. Behne, D., et al: West. J. Surg., Vol. 64, March, 1956.

L. V. Jonat, Swan River; B. Jonsson, Swan River; Matthews (Dentist), Swan River; W. Karlinsky, Winnipeg; M. T. Macfarland, Winnipeg; R. L. Willows, Winnipeg; Mr. Silverberg, a medical student also attended.

The Scientific session consisted of clinical cases presented by members of the staff.

A reception and delicious dinner preceded the evening session at which the speakers were Drs. W. Karlinsky — Subject: "Polymyositis and Dermatology"; and R. L. Willows — Subject: "Female Pelvic Malignancy."

At the business session the following officers were elected for the year 1960-61:

President: Dr. B. E. Symchych, Dauphin.
Vice-President: Dr. B. Jonsson, Swan River.
Sec.-Treas.: Dr. M. Potoski, Dauphin.
Representative to M.M.A. Executive Committee, 1960-61: Dr. M. Potoski, Dauphin.

A letter from M.M.A. containing a suggestion of the Department of Health and Public Welfare that Prenatal services be provided by Health Units in some outlying regions was deferred for study. It was requested that a copy of the letter be sent to each member.

Dr. Macfarland discussed Association business including Fee Schedules (M.M.A.-W.C.B.-M.M.S.); Tissue examinations under M.H.S.P.; Social Allowances Medicare; Hospital Survey Board; Traffic Accidents (Advisory Committee). He also discussed disciplinary problems of the College of Physicians and Surgeons.

It was agreed that the next meeting be held at Dauphin on Saturday, October 22nd, 1960.

After the meeting members were entertained at the home of Dr. and Mrs. Matthews.

M. T. Macfarland.

☆

C.M.A. Information Bulletins

The C.M.A. has commenced publishing information Bulletins covering the various fields in which the Association is interested and active.

Two Bulletins have been published to date, both of which are reprinted in the Review for the information of our members.

Bulletin No. I

Relationship of the Canadian Medical Association to Hospital Services and Personnel

Some thirty-three years ago, The Canadian Medical Association established a Department of Hospital Services, with the object of improving and standardizing the quality of junior interne training in hospitals across Canada.

This action stimulated the interest of organized medicine in various phases of hospital services, and the training of its technical personnel. The interest of the C.M.A. at this time was two-fold:

First: To ensure that medical graduates had a good introduction to medical practice — through a well-organized and supervised interneship;

Second: To ensure that the standards of patient care in hospitals were kept at a high level through:

a) adequate facilities
b) properly organized and supervised medical staffs, and
c) well-trained ancillary personnel.

Hospital Services

Improving the Standards of Good Patient Care in Hospitals

The introduction of a Department of Hospital Services by the C.M.A. resulted in the founding of the Canadian Hospital Association—which has been in operation since the early 1930's. With representation on the C.H.A. Board, the initial interest of the C.M.A. in improving the standards of good patient care in hospitals, increased yearly.

The Introduction of the Hospital Accreditation Program in Canada

For several years, Canadian hospitals were surveyed by American medical and hospital organizations, as part of an over-all accreditation program to improve standards of hospital care in Canada and the United States. The Canadian Medical Association was a member of this body — the Joint Commission on Accreditation of Hospitals.

The Canadian Council on Hospital Accreditation

In 1952, the C.M.A. along with the Canadian Hospital Association, the Royal College of Physicians and Surgeons of Canada, and L'Association des Medecins de Langue Francaise du Canada, established the Canadian Commission on Hospital Accreditation, to provide a similar program for Canadian hospitals. This Commission operated in conjunction with the Joint Commission on Hospital Accreditation in the United States, until January 1st, 1959, when it assumed full responsibility for the accreditation program in Canada — and was incorporated as the "Canadian Council on Hospital Accreditation." This all-Canadian program is financed entirely by organizations represented on the Council; and accreditation services are available, on a voluntary basis, to general and special hospitals having twenty-five beds or more. This service also applies to tuberculosis sanitoria.

The Council's program is devoted entirely to ensuring the best possible care to patients in Canadian hospitals; and giving leadership to improving the quality of that care as rapidly as knowledge and experience will permit.

Features of the Program

Under the program, qualified medical surveyors inspect every aspect of hospital administration and operations, to ensure the welfare and safety of the patient. They review the activities of the administrator and the governing body in respect to its legal and moral responsibility. In addition, they inspect hospital buildings, survey the departments,

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consider the qualifications of personnel, the adequacy of equipment and medical records, and the organization of the medical staff. Most hospitals in Canada take advantage of this program, in order to maintain and improve their own standards.

From 1954 to 1958, the Canadian Commission on Hospital Accreditation completed some 540 of the 785 hospital surveys undertaken in Canada. During this time, the number of accredited Canadian hospitals increased from 43 to 302.

Accreditation Facts of Interest

In spite of this measure of success, by 1958 only 40% of eligible Canadian hospitals were accredited, as compared with approximately 60% in the United States; and only 78% of Canadian hospitals with more than two-hundred beds, were accredited, as compared with about 90% in the United States.

The stimulus provided by the all-Canadian program resulted in twenty-seven new applications for accreditation during 1959. The Canadian Council surveyed one hundred and thirty-four hospitals, representing all Provinces: Of this number—

* 93 attained "accredited" status;
** 27 attained "provisional" accreditation;
14 were not accredited.

Out of a total of 786 eligible Canadian hospitals, approximately 325, or about 41%, are now accredited.

* The "accredited" hospital displays a Certificate of Accreditation, which is the hallmark of quality patient care in Canada.
** Hospitals that do not quite meet standards in certain areas of operation.

It seems quite evident that a larger number of hospitals will participate in the Canadian program —which more than justifies its introduction in January of 1959.

The increased demands, however, are reflected in increased expenditures. One of the most acute problems facing the Council is the matter of procuring additional funds to carry on the type of program that Canadian hospitals want.

The Financial Aspect of the Accreditation Program

Financially, the initial arrangement was that each member organization would pay the sum of $2,500 for each representative appointed to Council. With a total of twelve representatives, the annual income amounted to $30,000. In 1959, the member organizations accepted an increase to $4,000 per each representative, giving the Council an annual income at the present time of $48,000.

Owing to the increasing demands on the program, it is estimated that a budget of at least $60,500 will be required for 1960.

The costs for 1961 are estimated at not less than $73,750, and this will not include the overdue accreditation program for hospitals who take care of mentally ill patients.

The Popularity of Hospital Accreditation Results in Increased Expenditures

Realizing the importance of the accreditation program to both hospitals and patients — and the increase in operating expenses, The Canadian Council on Hospital Accreditation has approached the Department of National Health and Welfare for future financial assistance.

In addition to some $258,000 voluntarily contributed by the members to conduct the accreditation program in Canada, The Canadian Medical Association has paid in total almost $45,000 for its seat on the Joint Commission. The voluntary contributions of the members, therefore, have exceeded $290,000 in the past eight years. The representatives to the Council serve without remuneration, and are dedicated to the improvement of patient care in hospitals in Canada.

Bulletin No. II

The Relationship of the Canadian Medical Association to Hospital Personnel

As one of the prime objects of the Association is to improve medical services in Canada, it was not surprising that The Canadian Medical Association established standards of training for junior internes and laboratory technologists several years ago; and more recently for radiological technicians.

It has been traditional with members of the medical profession to give freely of their time in the training of other doctors and of ancillary medical personnel, such as laboratory and radiological technicians. The free exchange of medical knowledge fulfils one of the tenets of the Hippocratic Oath taken by medical graduates.

C.M.A. Junior Interne Training Program

The interne training program is the oldest approval program of the Association, and was established to provide standards of training for new medical graduates. This was considered an important step in the training of the young doctors. The first year of training, following an intensive academic course, is the transition period—when the young doctor develops techniques and methods which will last him throughout his medical career. A well-organized and supervised junior interne training program is therefore considered essential, as the first experience in post-graduate medical education.

At the present time, there are 77 hospitals in Canada approved by the Association for junior interne training, which provide approximately 1200 interneships for students who graduate from Canada's twelve Medical Schools each year.

Hospital appointments for the training of specialists are identified and approved by the Royal College of Physicians and Surgeons of Canada.

THE CLINICAL STUDY[1]:
Treatment of obesity.

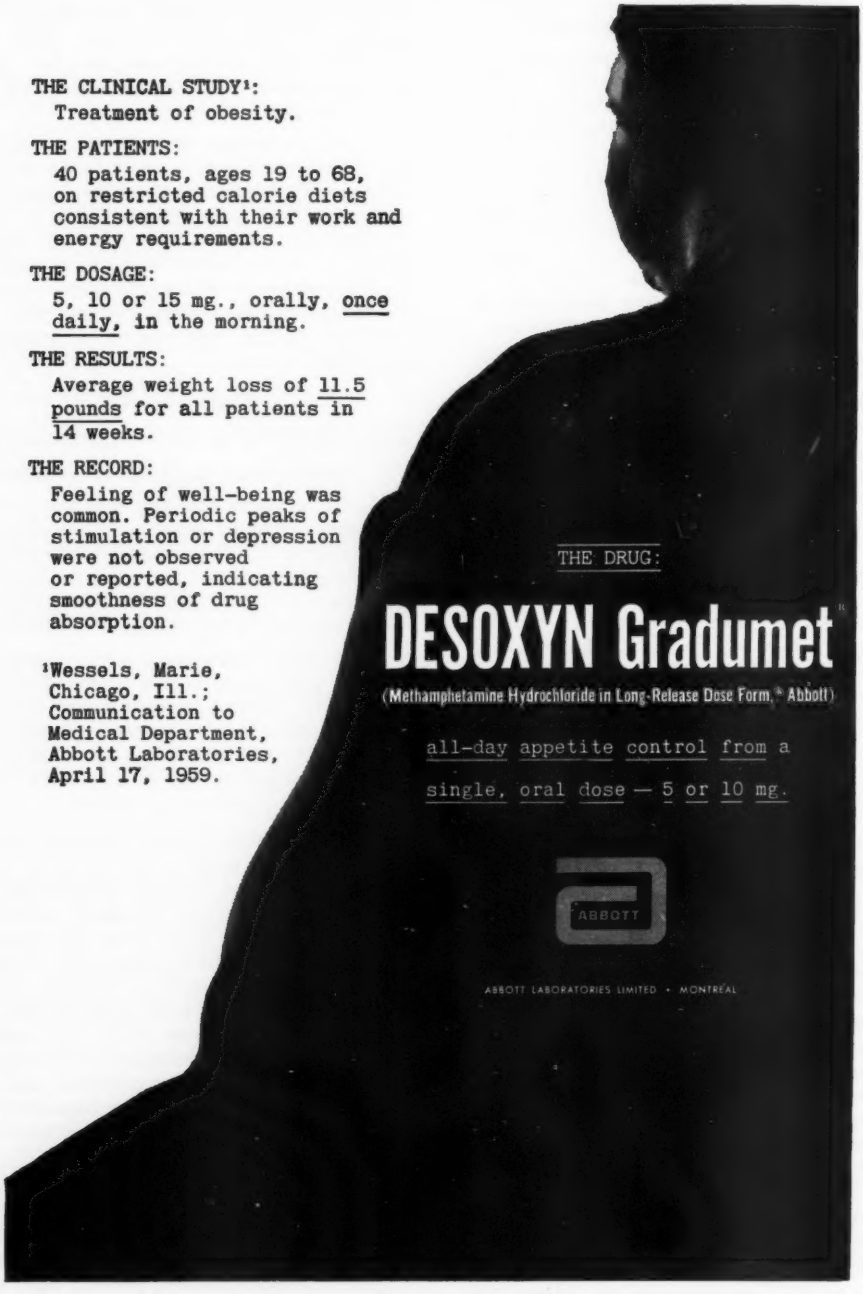
THE PATIENTS:
40 patients, ages 19 to 68, on restricted calorie diets consistent with their work and energy requirements.

THE DOSAGE:
5, 10 or 15 mg., orally, once daily, in the morning.

THE RESULTS:
Average weight loss of 11.5 pounds for all patients in 14 weeks.

THE RECORD:
Feeling of well-being was common. Periodic peaks of stimulation or depression were not observed or reported, indicating smoothness of drug absorption.

[1]Wessels, Marie, Chicago, Ill.; Communication to Medical Department, Abbott Laboratories, April 17, 1959.


THE DRUG:
DESOXYN Gradumet®
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all-day appetite control from a single, oral dose — 5 or 10 mg.
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Laboratory Technologists

The role of the laboratory technologist in medical science is a most important one, and their skill, knowledge and training are in keeping with the desire of The Canadian Medical Association to improve standards of patient care in hospitals.

In 1941, the C.M.A., in co-operation with the Canadian Society of Laboratory Technologists, established a program for the approval of schools in general hospitals, for the training of laboratory technologists. This program was developed by a committee of the Association to ensure the supply of such properly trained personnel in our hospitals and public health laboratories.

Approximately 100 Schools of Training are Approved by the C.M.A.

At the present time, there are approximately 100 approved hospital laboratory schools in Canada; and the standard of training is approved by The Canadian Medical Association Committee on Approval of Schools for Laboratory Technologists.

Information about Academic Requirements for Laboratory Technologists

Approved schools of training are located in all provinces; and students registering in a hospital training program are required to have their Senior Matriculation, including Chemistry, either Physics or a biological science, and two Mathematics. Students may be trained in a general course or take special courses in such subjects as Histology, Serology, Bacteriology, Haematology, and others. Graduates from schools approved by the C.M.A. are eligible to write the Canadian Society of Laboratory Technologists' examination, which leads to the qualification of REGISTERED LABORATORY TECHNOLOGIST, R.T. (Can.).

In addition to the twelve to twenty-four months' hospital training program, several Canadian Universities provide certificate and degree courses. In order to qualify for registration, however, students must take practical training in an approved hospital laboratory.

The total number of registered technologists presently employed in Canadian hospitals and other institutions is over the 1500 mark. Following completion of the first year in the training program, 36 qualified by registration; and in 1959, 375 students graduated.

Shortage of Registered Technologists is Still Acute

Although the number of graduating students has more than doubled since 1947, there is still an acute shortage of skilled personnel to meet the demand.

Radiological Technicians

C.M.A. Accepts Responsibility in Approving of Training for Radiological Technicians

In 1959, The Canadian Medical Association accepted the responsibility for approving schools for training radiological technicians. For some years, the approval of these schools and provision of training standards were carried out by the Canadian Society of Radiological Technicians and the Canadian Association of Radiologists. The C.M.A. entered the field at the request of these organizations.

In 1958, the Joint Committee on Technical Training for the C.S.R.T. and the C.A.R. became known as the "Joint Council on Technical Training School Standards;" and six members of this Council are now represented on the C.M.A. Committee on Approval of Training Schools for Radiological Technicians.

Purpose of the Program

The purpose of this approval program is similar to the others, which is to improve and maintain standards of education and performance of radiological technicians, and to ensure their supply in Canadian hospitals, offices and clinics. Training is supervised by the radiologist in charge, as well as properly trained registered technicians.

Information About Academic Requirements for Radiological Technicians

Students applying for admittance to the approved training schools are required to have at least their Junior Matriculation, which includes Physics and Chemistry; Biology is considered helpful but not essential. The length of the course is two years. Similar to laboratory technologists, graduates of approved schools are eligible to write examinations of the C.S.R.T. and, if successful, to obtain their R.T. qualifications as a properly trained radiological technician.

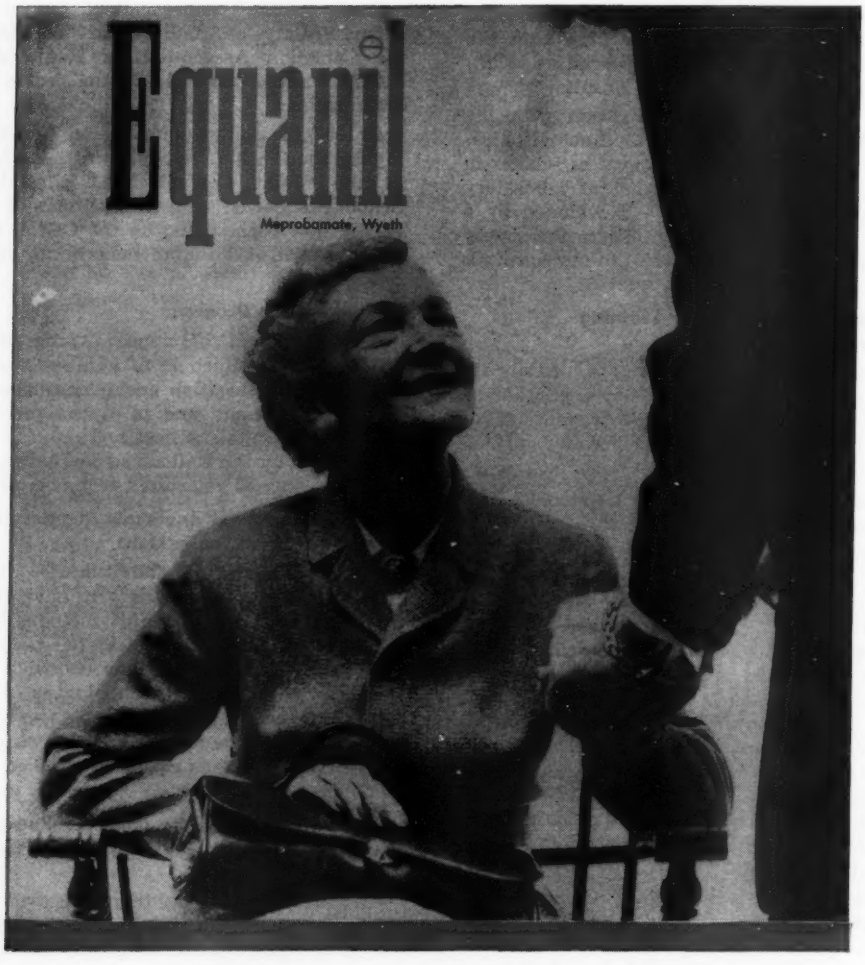
Approximately 1800 Students Graduate from over 100 Approved Training Schools in Past Ten Years

At the present time, there are over 100 interim approved schools of training. In the main, they are affiliated with general hospitals, cancer clinics and offices of radiologists. Last year some 291 students successfully passed the qualifying examinations. In 1950, however, there were only 79 graduates, but during the past ten years there have been over 1800.

Shortage of Male Radiological Graduates Indicated

Although the supply of qualified radiological technicians has been reported as being adequate in some areas, there are definite indications that the number of male graduates is not keeping pace with the demand. An underlying cause seems to be a relatively low rate of remuneration, which does not compete with other vocations.

The Canadian Medical Association recognizes the need to increase the tempo of the approval programs—in order to supply the increasing demand for these services under the current provincial hospital programs.



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When more than your personal assurance is required to relieve the emotional distress common to every illness, EQUANIL may confidently be prescribed to relax mind and muscle. EQUANIL is the most widely used ataractic agent; its efficacy and extreme safety in the control of tension, anxiety and muscle spasm are thoroughly documented in hundreds of published papers. The action of EQUANIL is specific. Side effects are rare. Because it is rapidly metabolized, effects are not cumulative. Because it does not cloud consciousness, your patients remain alert and co-operative.

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Social News

Reported by K. Borthwick-Leslie, M.D.

All good wishes for happy successful years of post graduate study to our numerous members in widespread appointments.

Those I have record of are:

Dr. and Mrs. R. A. Corne, with Carol, to the Mayo Clinic, Rochester, where Dr. Corne is on a three-year fellowship and will be doing internal medicine.

Dr. G. R. Cumming, doing medical research at U. of M. has had his fellowship from the Canadian Life Insurance Co. renewed for the third year.

Dr. and Mrs. Kirk Osterland, with Kathleen, to New York, where Kirk has been granted a two-year fellowship in medical research, by the Canadian Rheumatic & Arthritic Society, at the Rockefeller Institute.

Dr. and Mrs. Derryl H. Green, with Douglas, to Toronto, Ont., where Dr. Green plans three years of work in Ophthalmology.

Dr. and Mrs. Victor Cherniak, with Maria Susan, to Baltimore, Maryland, where Dr. Cherniak has been granted a research fellowship in pediatrics at the Johns Hopkins Hospital.

Dr. and Mrs. Wm. Merrick, University Hospital, Minneapolis, doing eye, ear, nose and throat post graduate study.

☆

Dr. Max Desmarais, recently returned from Morocco, reports his five months of work with oil-poisoned victims there as "The most unforgettable experience I've ever had." We hope to have many interesting papers and reports from Dr. Desmarais.

☆

Dr. A. B. Chapman, Reston, Man., was honored in Winnipeg on his 97th birthday. Graduating from Queen's University, Dr. Chapman has been practicing in Reston and district for sixty years. He served as a Major in the R.C.A.M.C. during the First World War, receiving the Military Medal for bravery and probably should receive a similar medal again, as he has delivered more than 2000 babies since he became a General Practitioner.

Hearty congratulations and best wishes for continued good health to Dr. Chapman.

☆

In Jasper, Alta., at the meeting of the Canadian Society of Obstetricians and Gynaecologists, Dr. Elinor F. E. Black was elected president of the society. She succeeds Dr. D. E. Cornell of Toronto.

☆

The Manitoba Clinic announces that William R. Welpley, M.B., B.S., F.R.C.S., has resumed his practice in the Dept. of Bone and Joint Surgery, also that Allan R. Downs, M.D. is associated with the Department of General Surgery.

☆

The Winnipeg Clinic announces that Basil J. S. Grogono, M.B., B.S. (Lond.), F.R.C.S. (Eng.) has joined the Dept. of Orthopedics.

Kevin J. R. Ford, M.R.C.S. (Eng.), L.R.C.P. (Lond.), D.P.M. (Manchester) has joined the Dept. of Neuropsychiatry.

William B. Ewart, B.Sc., M.D. (Man.) is associated with the Dept. of Internal Medicine .

☆

Dr. Richard B. Stillwater announces the opening of his office for the practice of Otorrhinology and Endoscopy at 513 Boyd Bldg., Winnipeg.

Manly B. Levin, B.Sc., M.D., F.R.C.S. (C), D.A.B. announces his association with Drs. Corne and Lehmann, at 302 Boyd Bldg., Winnipeg, in General and Thoracic Surgery.

☆

Dr. and Mrs. Laurence White of St. Paul, Minn., announce the engagement of their daughter Katherine Corinne to Donald Joel Hitesman, Winnipeg, son of Dr. and Mrs. R. J. Hitesman. The wedding will take place Aug. 20, 1960, in Fairbault, Minn.

☆

Dr. John Murray Goodwin, Teulon, Man., announces the engagement of his daughter, Patricia Anne, to Wm. Edgar McKane, Fort Garry. The wedding will take place August 6, 1960, in the Fort Garry United Church.

☆

St. Alban's Anglican Church was the scene of the marriage of Patricia Elizabeth, daughter of Mr. and Mrs. C. W. Wright to Dr. John Lorin Ledger, son of Mr. and Mrs. Cecil Ledger.

Dr. and Mrs. Ledger will reside in Selkirk, Man.

☆

Much activity in the nursery department. All proud parents are happy to announce their arrival:

May 30th—Dr. and Mrs. Samuel Bellan, another son, Murray Norman, their fourth.

May 31st—Drs. Ethel and Don McPhail of Boissevain, Man., Gordon Douglas, making a full house: three girls, two boys.

May 29th—Dr. and Mrs. Percy Barsky, a baby sister, Mindy Susan, for Ronald.

May 20th—Dr. and Mrs. Robt. Lawler — a son, Robert Ryan.

May 29th — Dr. and Mrs. Raymond Doskotch, Madison, Wis.—a brother for Donna, named Steven Raymond.

June 20th — Dr. and Mrs. Robert F. Burns, Rochester, Minn.—a son, Bryan Paul.

June 22nd — Dr. and Mrs. Richard Bird, their daughter, Susan Kathleen.

June 14th—Dr. and Mrs. Andrew Lillie, a second daughter, Tracy Elizabeth, University Hospital, Minneapolis.

June 26th — Dr. and Mrs. J. R. Cowan, a girl, Brenda Marie.

June 8th — Dr. and Mrs. Frederick Ollinik, Morden, Man. — Steven Donald, baby brother for Jill.

June 10th—Dr. and Mrs. K. D. McKenzie, a son, Douglas George, brother for Donnie and Elizabeth.

June 25th—Dr. and Mrs. Morley Sutter, a son, Gregory Robert.

June 18th—Dr. and Mrs. Jan Oosterhuis, London, Ont., a sister for David and Terry.

June 16th — Dr. and Mrs. Montgomery Hart, a son, Christopher Montgomery.

June 27th—Dr. and Mrs. Gordon A. Young, their daughter, Catherine Mary.

July 2nd—Dr. and Mrs. James S. McGoey, baby sister Susan Mary Catherine, for Theresa, Patrick, and Michael.

July 5th—Dr. and Mrs. J. D. Blaine, a daughter.

July 8th—Dr. and Mrs. Sherman Rosove, a son, Grant Paul.

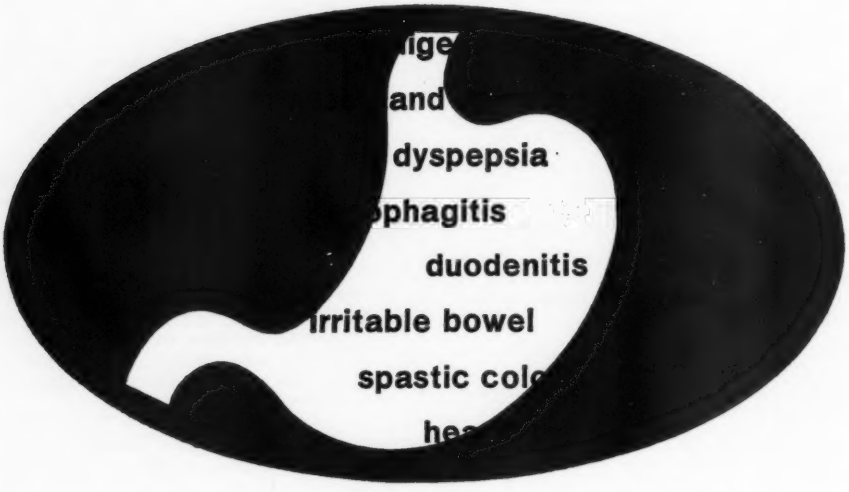
July 15th — Dr. and Mrs. H. M. McIntyre, a brother for Susan and Catherine, named James Mitchell.

July 9th—Dr. and Mrs. A. Ferre, Roblin, Man., a son.

N.B. — Don't forget September 28th and 29th. International College of Surgeons and Manitoba Medical Association combined meeting.

IN GASTRITIS

with related disorders such as:



when the sequence of symptoms spells PAIN-FOOD-PAIN

OXAINE*

Oxethazaine in Alumina Gel

a mucosal anaesthetic

- For many gastritic patients not *totally* managed by diet, antacids and anticholinergics
- Produces sustained mucosal anaesthesia over many hours—usually only q.i.d. regimen required
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- Safe, not a "caine"; only 2 known cases of sensitivity occurred in the extensive clinical trials
- Bland, noncloying over long-term administration

*Trade Mark

DOSAGE: Usual dosage is 1 or 2 teaspoonfuls 4 times daily, 15 minutes before meals and at bedtime. Do not exceed recommended dosage.

SUPPLY: Bottles of 12 fl. oz.

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Questions and Answers Page

In order to keep the medical profession informed as fully as possible in all matters relating to Association business, medical economics and prepaid medical care, this page welcomes questions pertaining to these fields.

Question: What are the beliefs and principles of the Canadian Medical Association in relation to prepaid medical care which were adopted at the Annual Meeting in Banff?

Answer: The following is the policy developed by the Canadian Medical Association at its annual meeting in Banff:

Statement on Medical Services Insurance

The Canadian Medical Association believes THAT

1. The highest standard of medical services should be available to every resident of Canada.

2. Insurance to prepay the costs of medical services should be available to all regardless of age, state of health or financial status.

3. Certain individuals require assistance.

4. Efforts of organized medicine, governments and all other interested bodies should be co-ordinated towards these ends.

5. While there are certain aspects of medical services in which tax-supported programs are necessary, a tax-supported comprehensive program, compulsory for all, is neither necessary nor desirable.

The Canadian Medical Association will support any program of medical services insurance which adheres to the following principles:

1. That all persons rendering services are legally qualified physicians and surgeons.

2. That every resident of Canada is free to select his doctor, and that each doctor is free to choose his patients.

3. That the competence and ability of any doctor is determined only by professional self-government.

4. That, within his competence, each physician has the privilege to treat his patients in and out of hospital.

5. That each individual physician is free to select the type and location of his practice.

6. That each patient has the right to have all information pertaining to his medical condition kept confidential except where the public interest is paramount.

7. That the duty of the physician to his individual patient takes precedence over his obligations to any medical services insurance program.

8. That every resident of Canada, whether a recipient or provider of services, has the right of recourse to the courts in all disputes.

9. That medical services insurance programs do not in any way preclude the private practice of medicine.

10. That medical research, undergraduate and postgraduate teaching are not inhibited by any medical services insurance program.

11. That the administration and finances of medical services insurance programs are completely separate from other programs, and that any board, commission or agency set up to administer any medical services insurance program has fiscal authority and autonomy.

12. That the composite opinion of the appropriate body of the medical profession is considered and the medical profession adequately represented on any board, commission or agency set up to plan, to establish policy or to direct administration for any medical services insurance program.

13. That members of the medical profession, as the providers of medical services, have the right to determine the method of their remuneration.

14. That the amount of remuneration is a matter for negotiation between the physician and his patient, or those acting on their behalf; and that all medical services programs make provision for periodic or automatic changes in remuneration to reflect changes in economic conditions.

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• • • A proven formula for infant feeding, Pacific Partly Skimmed Milk is now available to the Prairie mother. Made to the same high standards of quality as Pacific Evaporated Milk, our partly skimmed milk has the following properties:

- **low butterfat content (2% when reconstituted with equal parts of water).**
- **increased Vitamin D (one pint contains 800 I.U.s).**
- **carefully controlled composition.**

Pacific Partly Skimmed is evaporated to double concentration, homogenized for increased digestibility, and sterilized in vacuum sealed, golden-lined tins.

- ***Widely used in British Columbia under the Delta label where it has received the approval of B.C. doctors and mothers. This special formula was processed at the request of prominent pediatricians.***

You can recommend **PACIFIC PARTLY SKIMMED MILK** *with confidence*

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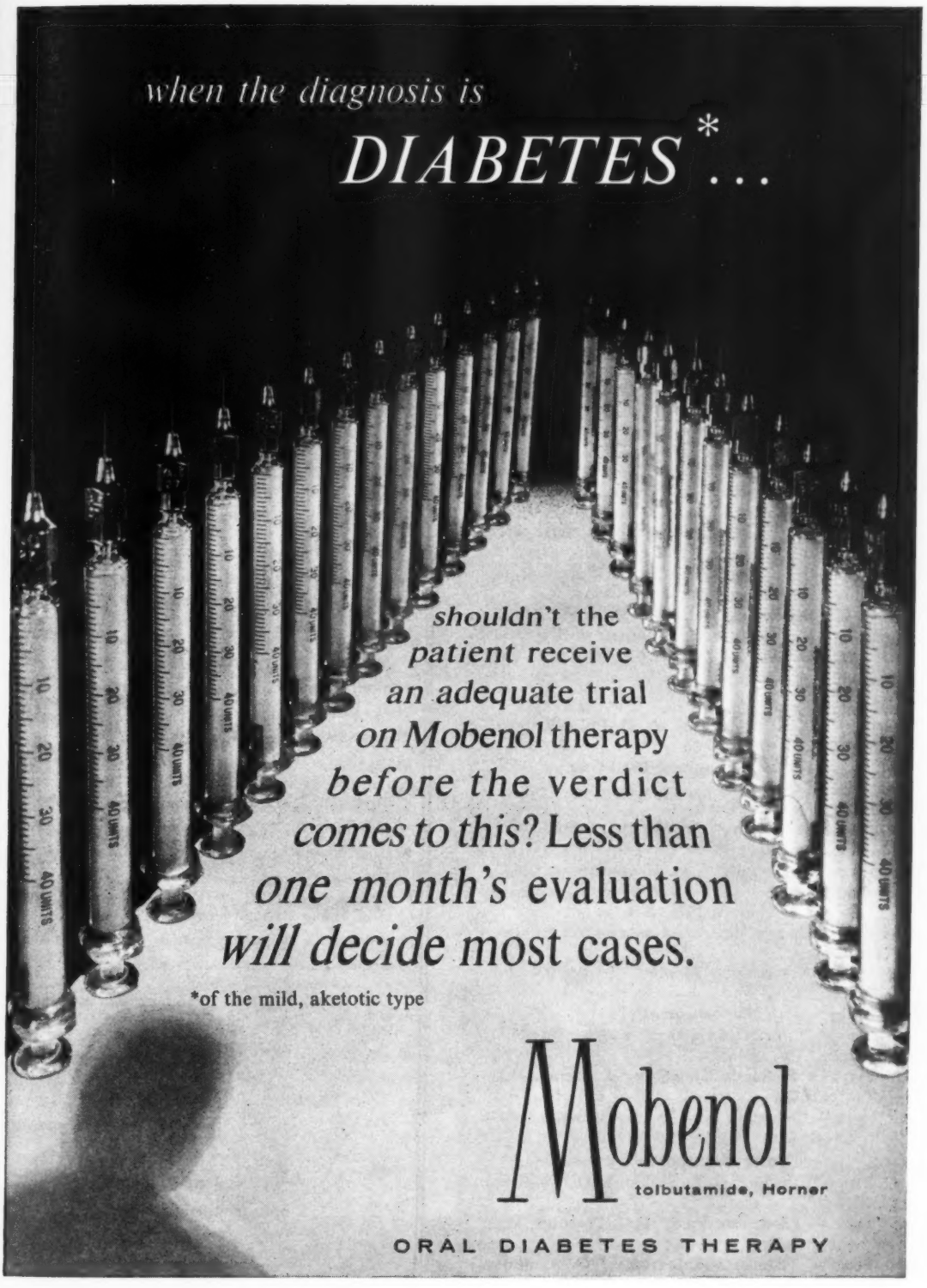
when the diagnosis is
DIABETES*...
shouldn't the patient receive an adequate trial on Mobenol therapy before the verdict comes to this? Less than one month's evaluation will decide most cases.
*of the mild, aketotic type
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ORAL DIABETES THERAPY

Physicians' Art Salon Awards to 42 Physicians Announced by Horner

With the majestic Canadian Rockies as a background, the Riverview Lounge of the Banff Springs Hotel was the scene of the largest exhibition of Fine Art and Photography by Canadian physicians in the fifteen year history of the Physicians' Art Salon.

Sponsored, as in former years, by Frank W. Horner Limited, the Salon run in conjunction with the annual C.M.A. meeting, was viewed and judged excellent not only by the attending physicians and their families but by many members of the Banff School of Fine Arts.

Make 46 Awards

The Jury of Selection — Illingworth H. Kerr, A.S.A., Maxwell Bates, A.S.A., C.S.P.W.C., and Gregory H. Arnold — selected 44 entries for awards. One physician, Dr. R. V. Worling of Hamilton, Ontario, was a triple winner while Drs. B. Z. Steine of Montreal and A. L. Crewson of Cornwall won double awards.

Engraved plaques to all winners and certificates of merit to those receiving Honourable Mention, are presented by Frank W. Horner Limited, on behalf of the Physicians' Art Salon Committee.

1961 Physicians' Art Salon Calendar

A selection of the award winners will appear in the 1961 Art Salon Calendar to be produced and distributed by Horner to all Canadian physicians.

☆

1st Prize — "Abating Storm," A. D. Pollock, M.D., Owen Sound, Ont.

2nd Prize—"Pins Tourmentes," Paul Ouellet, M.D., Quebec, P.Q.

Portrait

1st Prize — "Old Man," M. D. Charendoff, M.D., Toronto, Ont.

2nd Prize — "Feridah," F. C. Emberton, M.D., Brooks, Alta.

Modern Fine Art

1st Prize—"Amalfi Coast," A. Cantero, M.D., Outremont, Que.

2nd Prize — "Semper Fidelis," S. Rabinovitch, Montreal, Que.

Monochromes

1st Prize — "Laura Jean," D. C. Eaglesham, M.D., Guelph, Ont.

2nd Prize — "Stitch in Time," B. Z. Steine, M.D., Montreal, Que.

3rd Prize — "Hanging Ice," A. L. Crewson, M.D., Cornwall, Ont.

Color Transparencies

1st Prize—"Pilgrim," B. Z. Steine, M.D., Montreal, Que.

2nd Prize — "Siesta de Pied," P. J. Portnuff, M.D., Yorkton, Sask.

3rd Prize — "Storm and Serenity," G. A. Judge, M.D., Burford, Ont.

THE UNIVERSITY OF MANITOBA

POST GRADUATE TRAINING IN PSYCHIATRY

The Department of Psychiatry offers a comprehensive training program designed to qualify candidates for the Diploma in Psychiatry and for examinations of the Royal College of Physicians and Surgeons of Canada.

Prerequisites are graduation from an approved medical school and one year's rotating internship. Trainees may be given credit for previous post-graduate training.

The program consists of four years' supervised clinical experience in a number of hospitals and clinics, and correlated didactic courses in the Department of Psychiatry and in other University Departments.

Applications should be made to the Department of Psychiatry by October 1st annually. Successful applicants will commence their residency July 1st of succeeding year.

The remuneration provided varies with the training area. A limited number of Bursaries and Teaching Assistantships are available.

Additional information and application forms may be obtained by writing to:

THE DEPARTMENT OF PSYCHIATRY
UNIVERSITY OF MANITOBA
Room 110
Medical College Buildings
Bannatyne and Emily
Winnipeg 3, Manitoba

DEPARTMENT OF HEALTH & PUBLIC WELFARE

COMMUNICABLE DISEASE PICTURE

North of 53 District

One case each of diarrhoea and enteritis under four weeks of age and bacillary dysentery were reported.

Northwestern District

Infectious hepatitis is again prevalent with six cases during the month. Two cases of scarlet fever were notified.

Northern District

One case of whooping cough and one of brucellosis were notified.

Brandon District

One case of paralytic polio was reported in a three year old girl. She had received four doses of salk vaccine.

Central District

One case of diarrhoea and enteritis in a new born was reported.

Winnipeg District

There were twenty-seven cases of infectious hepatitis. The enteric diseases were common, there being seven bacillary dysentery; thirteen salmonella infections and one diarrhoea and enteritis. A further case of brucellosis was reported and there were four cases of scarlet fever. The only unusual report was a case of psittacosis in St. Vital.

Southern District

One case of poliomyeltis was reported in an Indian child aged three years. She had received no salk vaccine. A type III virus was isolated

LIST OF DEATHS FROM COMMUNICABLE DISEASES

June, 1960

URBAN: Cancer, 80; Diarrhoea and Enteritis, 1; Pneumonia Lobar (490), 3; Pneumonias (other forms), 23; Tuberculosis, 1. Other deaths under 1 year 19. Other deaths over 1 year, 267. Stillbirths, 13. Total, 407.

RURAL: Cancer, 22; Diarrhoea & Enteritis, 1; Influenza, 1; Pneumonia Lobar (490), 2; Pneumonias (other forms), 6; Tuberculosis, 2; Other diseases attributable to viruses, 1. Other deaths under 1 year, 18. Other deaths over 1 year, 197. Stillbirths, 12. Total, 264.

INDIANS: Diarrhoea & Enteritis, 1; Pneumonias (other forms), 2. Other deaths under 1 year, 1. Other deaths over 1 year, 0. Stillbirths, 1. Total, 4.

General

The incidence of communicable disease during the month remains small, there were however thirty-five cases of infectious hepatitis reported. Two further cases of paralytic poliomyelitis bring the total for the year up to four. Three had received no vaccine.

Obituaries

Dr. Jules Philip Gussin

Dr. Jules Philip Gussin, 58, who practised in St. Boniface, died June 24th, 1960. He graduated in medicine in 1926 and was licensed to practice in British Columbia and Saskatchewan. He was a Mason and a Shriner. His wife and two daughters survive him.

Dr. Nicholas A. Ost

Dr. Nicholas A. Ost, 49, died July 6th at his residence in Fort William, Ontario. Born in Manitoba, he graduated M.D. from Manitoba University in 1935, interned at St. Boniface and Misericordia hospitals in Winnipeg and St. Joseph's hospital, Port Arthur. He was past-president of the McKellar Hospital medical staff and past-secretary of the Thunder Bay Medical Association.

Dr. Alexander Poniemunski

Dr. Alexander Poniemunski, 75, died July 7th in Winnipeg, where he came a month earlier from Berlin. He practised there for over forty years. He is survived by a son and two grandsons.

Dr. Irvin E. Weisstub

Dr. Irvine E. Weisstub died on June 13th. Born in Russia, he took postgraduate work in Vienna. 1932 to 1955 he practised in Port Arthur, then moved to Winnipeg where he lived in semi-retirement writing scientific articles for the C.M.A. Journal and short humorous stories in Hebrew and Yiddish. He is survived by his widow and two sons.

Dr. Ernest Harold Whelpley

Dr. Ernest Harold Whelpley, 69, died on June 23rd in Deer Lodge Hospital. He graduated from Manitoba Medical College in 1915, served as captain with the R.C.A.M.C. from 1915 to 1919 and was awarded the Military Cross. On his return he served as interne at the Children's Hospital then practised in Arden and Angusville. He served as a major with the R.C.A.M.C. in Canada during the second world war then was appointed district medical officer with the department of veterans' affairs until his retirement in 1955. He is survived by his widow, a daughter and four grandchildren.

Physician Required

WANTED — PHYSICIAN with special interest in internal medicine for Clearwater Lake Hospital, The Pas, Manitoba. Hospital fully accredited. Salary $8,000 per annum with excellent housing at nominal rental charge. Apply stating qualifications and experience to Medical Director, Sanatorium Board of Manitoba, 1654 Portage Avenue, Winnipeg 12, Manitoba.

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Diiodohydroxyquinoline U.S.P.	75 mg.	75 mg.
Sodium Propionate	500 mg.	250 mg.
Sulfadiazine U.S.P.	400 mg.	400 mg.
Phenoxyethanol B.P.C.	0.04 ml.	
Destrose and Lactose	q.s.	q.s.

OVOQUINOL-OESTRO

Same formula as OVOQUINOL-PLAIN plus 0.01 mg. Ethinyl-oestradiol B.P. per cone or tablet.

DOSAGE

One or two cones or tablets per day preferably at bed-time or as prescribed by the physician.

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